PROCEEDINGS

OF THE

MADRAS GOVERNMENT

IN THE

PUBLIC WORKS DEPARTMENT,

IRRIGATION BRANCH,

FOR THE

MONTH OF FEBRUARY 1889.

Printed by Authority.

MADRAS:
PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRESS.

1889.

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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

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1 Subjects.	2 Dates of Proceedings.	3 Date of Report to Secretary of State for India.	4 Numbers and Dates of previous Proceedings.
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PUBLIC WORKS DEPARTMENT,

IRRIGATION BRANCH.

PROCEEDINGS OF THE MADRAS GOVERNMENT,

FOR THE MONTH OF FEBRUARY 1889.

Irrigation.
Account.

READ—the following paper :—

Note by the Acting Chief Engineer for Irrigation.

No. 6 I.

The accompanying statement shows the modifications of the current year's allotments under 45. Minor Works and Navigation applied for by Superintending Engineers and those recommended for sanction.

2. The additional allotment of Rs. 1,000 required for storage works of the Pelandorai anicut system is for completing the improvements to the Striputhur tank and for raising the bund of the Konamangalam tank. The revised estimate for the latter work is said to be under reference with the Executive Engineer.

3. The additional allotment of Rs. 3,500 for Minor Original Works in the South Arcot division is required for commencing certain works considered to be urgent.

4. The additional allotment of Rs. 3,000 applied for for the Bellary division under repairs is required to admit of the annual clearance of the Tungabhadra channels being carried out.

5. The Executive Engineer, Chingleput Division, has applied for an additional allotment of Rs. 35,000 for repairs to ordinary irrigation works to admit of the closing of the breaches that occurred during the cyclone of 31st October last. The total cost of repairing the damages will, it is reported, far exceed the amount applied for. The allotment of a sum of Rs. 25,000 is recommended.

6. The allotment for pitching the eroded portion between $11\frac{3}{4}$ and 12 miles of the Tambráparni river left bank below the Srívaikuntham anicut in the Tinnevelly division is not required, as this portion of the bank has been carried away by floods. Out of this amount, Rs. 1,000 are required for the closing of the breaches which the Executive Engineer has been ordered to commence.

7. A sum of Rs. 4,000 could be advantageously spent on the Coleroon left bank from the Coleroon bridge to the Nandyár anicut and a similar sum on repairs (river conservancy) in the Tanjore division in addition to the existing grant of Rs. 16,000.

8. It is recommended that the additional allotments for items 1 and 2, aggregating Rs. 3,000 or Rs. 3,690, including establishment charges, be appropriated by transfer from the reserve available under tank restoration works as shown below :—

	RS.
Repairs	2,964
Establishment	682
Tools and plant	44
Total ...	3,690

The balance of the reserve under Irrigation and Navigation works for which neither Capital nor Revenue accounts are kept—Ordinary works—Repairs is Rs. 4,243. The sum may be appropriated to meet in part the net demand of Rs. 26,768 for items 3 to 12 and the balance of the demand together with Rs. 5,518 * for establishment and tools and plant charges may be appropriated by transfer from the reserve under tank restoration works as shown below :—

	RS.
* Establishment	5,181
Tools and plant	337
Total ...	5,518

	RS.
Original works	1,375
Repairs	21,150
Establishment	5,181
Tools and plant	337
Total ...	28,043

9. The net demand of Rs. 3,250 for items 13 to 21 under agricultural works together with Rs. 797 for establishment and tools and plant charges may also be met by transfer from the reserve under tank restoration works as shown below :—

	RS.
Repairs	3,250
Establishment	748
Tools and plant	49
Total ...	4,047

10. The balance of the reserve still available under Tank Restoration works—Repairs—will be Rs. 5,957. The Superintending Engineer, V Circle, should report if a further additional allotment for closing the breaches of the ordinary irrigation works in the Chingleput division is absolutely necessary. The amount available may on receipt of this report be appropriated if necessary.

Chepâk,
24th January 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Enclosure.

Statement showing the modifications of allotments applied for under 43. Minor Works and Navigation.

Division.	Item No.	Name of work.	Existing grant.	Modifications applied for.		Modifications recommended.	
				Reduction.	Increase.	Reduction.	Increase.
1	2	3	4	5	6	7	8
		Irrigation and Navigation Works for which Capital and Revenue accounts are kept.	RS.	RS.	RS.	RS.	RS.
		Capital Account.					
South Arcot ..	1	Pelandorai anicut system—Storage works	4,000	..	1,000	..	1,000
		Revenue Account.					
		Maintenance and Repairs					
Do. ..	2	Pelandorai anicut system ..	10,005	..	2,000	..	2,000

Statement showing the modifications of allotments applied for under 43. Minor Works and Navigation—*cont.*

Division.	Item No.	Name of work.	Existing grant.	Modifications applied for		Modifications recommended	
				Reduction.	Increase.	Reduction.	Increase.
1	2	3	4	5	6	7	8
		Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept.	RS.	RS.	RS.	RS.	RS.
		Original Works.					
Kistna, Eastern.	3	Kottur tank surplus weir	861	769	..	769	..
	4	Velagaleru Balerow tank surplus weir.	617	63	..	63	..
Cuddapah ..	5	Chinnampalli tank improvements ..	2,083	200	..	200	..
	6	Iyavari Cheruvu tank do. ..	5,000	200	..	200	..
Kurnool ..	7	Minor original works	1,500	1,000	..	1,000	..
Cuddapah ..	8	Do.	2,500	..	500	..	500
South Arcot ..	9	Do.	12,000	..	3,500	..	3,500
Kurnool ..	10	Repairs	5,000	3,000	..	3,000	..
Bellary ..	11	Do.	25,000	..	3,000	..	3,000
Chingleput ..	12	Do.	56,000	..	35,000	..	25,000
		Total ..	..	5,232	42,000	5,232	32,000
		Agricultural Works.					
Kistna, Eastern.	13	Kistna river, left bank, 1st reach ..	737	737	..	737	..
South Arcot ..	14	Extension of the bank across the South Malatar.	..	..	600	..	600
Trichinopoly ..	15	Coleroon left bank from Coleroon bridge to Nandyár anicut.	10,000	..	4,000	..	4,000
Tinnevelly ..	16	Tambráparni left bank below Srívaikuntham anicut pitching the eroded portion between $11\frac{3}{4}$ and and 12 miles.	5,980	5,980	..	5,980	..
South Arcot ..	17	Repairs—River conservancy ..	3,000	..	400	..	400
Tanjore ..	18	Do. do.	16,000	..	4,000	..	4,000
Kistna, Eastern.	19	Do. River embankments ..	8,000	1,369	..	1,369	..
South Arcot ..	20	Do. do.	3,664	..	1,336	..	1,336
Tinnevelly ..	21	Do. do.	6,000	..	1,000	..	1,000
		Total ..	..	8,086	11,336	8,086	11,336

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

Order—dated 1st February 1889, No. 33 I., Public Works.

The modifications of allotments and appropriation of funds recommended by the Acting Chief Engineer for Irrigation are sanctioned.

2. The Superintending Engineer, V Circle, will report, at once, whether any, and, if so, what additional funds can be utilised in the current year for closing the breaches of the irrigation works, which occurred during the cyclone of 31st October last.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" " " III "
" " " V "
" " " VI "
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS:

Dated February, 1st.

Recd. *Encl.*

G.O., 1st Feb. 1889, No. 33 I.

FEBRUARY.

Funds

Certain modifications of allotments and appropriation of funds, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Puduchatram, 24th January 1889, No. 969 T.C.

I have the honor to request sanction to the following modifications of allotments under Agricultural works— Repairs — in the Trichinopoly division :—

From	RS.	*To*	RS.
River embankment	3,000	River conservancy	3,000

2. The existing grant under river embankment is Rs. 15,000; this is not likely to be fully utilised as the repairs to the Iyar right flood bank have been stopped under your No. 21 T.C. of 25th July 1888. Hence there is a saving of Rs. 3,000 expected from the grant.

3. The original grant of Rs. 7,000 under river conservancy has been in G.O., No. 753 I., of 20th December 1888, raised to Rs. 10,000; of this sum only Rs. 4,657 were spent up to December 1888. Several estimates for nanal planting having been lately sanctioned and operations being carried on vigorously since the beginning of January, the Executive Engineer hopes to spend fully the balance of the grant, together with another Rs. 3,000, by the end of March. I would, therefore, recommend the transfer of this additional sum from river embankment.

4. The previous short outlay under river conservancy has been chiefly due to freshes in the rivers and to the proper season for nanal planting being from January.

Order—dated 1st February 1889, No. 34 I., Public Works.

The following transfer of funds is sanctioned :—

Provincial.
43. Minor Works and Navigation Works for which neither Capital nor Revenue Accounts are kept.
Agricultural Works.
Trichinopoly Division.
Repairs.

From.	RS.	*To*	RS.
River embankments	3,000	River conservancy	3,000

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 1st.

Recd. *Encl.*

G.O., 1st Feb. 1889, No. 34 I.

FEBRUARY.

Funds

Certain transfer of —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following paper:—

From G. D. WYBROW, Esq., Executive Engineer, Rushikulya Division, to the Superintending Engineer, I Circle, dated Doegam, 1st January 1889, No. 218 S.E.

With reference to your No. 925 G.N., dated 21st December 1888, I have the honor to forward, herewith, a revised schedule for Rs. 2,56,255,* sanctioned for current year for Rushikulya project, including establishment and tools and plant, for your approval and transmission to Government for sanction.

	RS.
* Budget grant for the project ...	2,00,000
Additional allotment sanctioned in Superintending Engineer's telegram, dated 5th November 1888.	30,000
Additional allotment sanctioned in the Chief Engineer's telegram, dated 10th December 1888 ...	13,000
Revenue derived from lands taken up for the project	13,255
Total allotment ...	2,56,255

2. In the above schedule a sum of Rs. 1,000 has been taken for tools and plant from the amount of Rs. 13,000 sanctioned in Chief Engineer's telegram of 10th December 1888 to meet the cost of 1,000 mamoties indented for in this office No. 213 S.E. of 19th December 1888.

No. 1017 G.N.

Copy submitted to the Chief Engineer for Irrigation together with the application for modification of allotments with the request that he will be good enough to obtain the sanction of Government to the same with reference to G.O., No. 751 I., dated 20th December 1888.

(Signed) R. R. E. DRAKE-BROCKMAN,
Superintending Engineer, I Circle.

22nd January 1889.

ENCLOSURE.

I CIRCLE.

Third revised application for modifications of allotments for 1888-89.

Division.	Item No.	Main and sub-head.	Name of work.	Existing grant.	Modifications of allotments applied for: Reduction.	Modifications of allotments applied for: Increase.	Modifications of allotments proposed by Chief Engineer: Reduction.	Modifications of allotments proposed by Chief Engineer: Increase.
				RS.	RS.	RS.	RS.	RS.
Rushikulya Division.			FAMINE RELIEF AND INSURANCE.					
			35. CONSTRUCTION OF PROTECTIVE IRRIGATION WORKS.					
			Head works.					
	1	A. Preliminary expenses.	Temporary survey establishment.	114	..	..	..	..
	2	B. Land	Temporary establishment required for expediting the acquisition of land.	7,500	..	..	..	..
	3	K. Buildings ..	Constructing fence around the Executive Engineer's bungalow at Doegam.	171	..	..	..	..
	4	Do. ..	Constructing quarters for Divisional establishment at Doegam.	2,400	..	..	..	..
	5	Do. ..	Constructing godowns and stables at Doegam.	200	..	..	..	..
	6	Do. ..	Constructing store-shed at Doegam.	650	..	..	..	..
	7	P. Maintenance ..	Repairing Executive Engineer's bungalow at Doegam.	47	..	..	..	..
	8	Do. ..	Repairing rest-house at Errandra.	130	..	..	..	..
	9	Do. ..	Improvements to the Divisional office at Doegam.	265	..	..	..	..
			Mahanadi Section.					
	10	A. Preliminary expenses.	Clearing jungle, Russellkonda reservoir.	50	..	100	..	..
	11	B. Land ..	Land for Russellkonda reservoir.	15,400	..	..	..	..
	12	C. Works ..	Russellkonda reservoir dam.	21,492	..	2,763	..	..
	13	Do. ..	Do. head-sluice ..	222	..	73	..	..
	14	Do. ..	Goomsur anicut ..	10,623	4,123	..	..	..
	15	Do. ..	Head-sluice to Goomsur anicut.	..	..	4,500	..	..
	16	Do. ..	Under sluices (scouring sluice) to Goomsur anicut.	..	..	4,000	..	..
	17	P. Maintenance ..	Re-thatching rest-house at Goomsur.	33	..	..	..	..
	18	Do. ..	Repairing the rest-house at Russellkonda.	80	..	..	..	..
			Rushikulya Section.					
	19	B. Land ..	Compensation for Suradá reservoir.	5,000	..	..	..	..
	20	C. Works ..	Suradá reservoir dam ..	119	..	..	..	..
	21	Do. ..	Janamilli anicut ..	10,348	..	..	..	..
	22	P. Maintenance ..	Repairing godowns and stables at Suradá.	38	..	..	..	..
			(2) MAIN CANALS AND BRANCHES.					
			Rushikulya Section.					
	23	B. Land ..	Compensation for land ..	13,000	..	..	..	..
	24	F. River and hill torrent works.	Under tunnel, No. 1 ..	177	..	250	..	..
	25	Do. ..	Do. ,, 2 ..	101	..	..	..	..
	26	Do. ..	Do. ,, 3 ..	61	..	..	..	..
	27	Do. ..	Do. ,, 4 ..	260	..	250	..	..
	28	Do. ..	Do. ,, 5 ..	25	..	..	..	..
	29	Do. ..	Do. ,, 6 ..	57	..	..	..	..
	30	Do. ..	Do. ,, 7 ..	117	..	..	..	..
	31	Do. ..	Do. ,, 8 ..	250	..	400	..	..
	32	Do. ..	Do. ,, 9 ..	532	..	..	..	..
	33	Do. ..	Do. ,, 10 ..	692	..	..	..	..
	34	Do. ..	Do. ,, 11 ..	2,653	..	100	..	..
	35	Do. ..	Do. ,, 12 ..	382	..	..	..	..
	36	Do. ..	Godahallow aqueduct ..	2,704	..	600	..	..

Third revised application for modifications of allotments for 1888-89—*cont.*

Division.	Item No.	Main and sub-head.	Name of work.	Existing grant.	Modifications of allotments applied for		Modifications of allotments proposed by Chief Engineer.	
					Reduction.	Increase.	Reduction.	Increase.
Rushikulya Division.			*Rushikulya Section*—cont.	RS.	RS.	RS.	RS.	RS.
	37	F. River and hill torrent works.	Sheragada aqueduct ..	898	..	200	..	..
	38	G. Bridges ..	No. 1 Bridge on ½ mile ..	..	..	53	..	..
	39	Do. ..	,, 2 do. ..	777	..	..	..	..
	40	Do. ..	,, 3 do. ..	1,190	..	..	..	..
	41	Do. ..	,, 5 do. ..	..	..	16	..	..
	42	Do. ..	,, 6 do. ..	422	..	..	..	..
	43	Do. ..	,, 7 do. ..	..	..	14	..	..
	44	L. Earthwork ..	Excavation of canal ..	57,202	..	7,117	..	..
	45	M. Plantation ..	Planting trees along Rushikulya canal.	173	..	..	..	..
			Mahanadi Canal.					
	46	A. Preliminary expenses.	Clearing jungle ..	394	..	6	..	..
	47	B. Land ..	Compensation for land ..	2,600	..	..	..	..
	48	F (1) Other cross drainage works.	Under tunnel No. 1 ..	3,121	..	1,379	..	..
	49	Do. ..	Do. ,, 3 ..	64	..	..	..	..
	50	Do. ..	Do. ,, 4 ..	485	..	1	..	..
	51	Do. ..	Do. ,, 5 ..	218	..	..	..	..
	52	Do. ..	Do. ,, 10 ..	1,188	..	..	..	..
	53	G. Bridges ..	Bridge No. 1 (late No. 4) ..	89	..	..	..	..
	54	L. Earthwork ..	Excavation of canal ..	24,167	..	2,833	..	..
	55	M. Plantation ..	Planting trees	103	..	..	..	..
			Total for works ..	1,88,984	4,123	24,655	..	..
			Establishment charges at 23 per cent. on Rs. 1,66,016 (2,09,516—43,500 given for land.)	33,461	..	4,723	..	..
			Tools and Plant ..	7,555	..	1,000	..	..
				2,30,000	4,123	30,378	..	..

Order—dated 1st February 1889, No. 35 I., Public Works.

The modifications of allotments proposed for works of the Rushikulya project in the application received with the foregoing endorsement are sanctioned.

2. The Examiner of Public Works Accounts will regulate the issue of credit according to the total grant of Rs. 2,56,255 for the project which includes Rs. 13,255, the revenue derived from the lands taken up for the project and let out for cultivation until they are required. He will, in communication with the Accountant-General, Madras, see that this revenue is credited to the project in the current year's accounts.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, I Circle.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 1st.

Recd. *Encl.*

G.O., 1st Feb. 1889, No. 35 I.

FEBRUARY.

Rushikulya Project

Modifications of allotments for works of the —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 17th January 1889, No. 2221 T.J.

I have the honor to request sanction of Government, under Code, para. 1339, to the employment of a watchman for 6 months on Rs. 4 per month to be in charge of the shutters of the Valur channel in the Tanjore division.

2. The mirasidars interested in the channel have contributed the sum of Rs. 24 and requested to have the regulation of the water in charge of this department. The proposal has been approved by the Collector and the contribution paid into the treasury.

Order—dated 1st February 1889, No. 36 I., Public Works.

The employment of a watchman for 6 months at Rs. 4 per mensem to be in charge of the shutters of the Valur channel in the Tanjore division is sanctioned under para. 1339 of the Public Works Code, the expenditure being met from the amount contributed by the mirasidars interested.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 1st.

Recd. *Encl.*

G.O., 1st Feb. 1889, No. 36 I.

FEBRUARY.

Establishment

Employment of a watchman for charge of the shutters of the Valur channel in the Tanjore division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers:—

Letter from the Superintending Engineer, II Circle, dated 22nd Nov. 1888, No. 1896 K.S.
Memo. to do. do. „ 29th do. No. II-120 K.S.
Letter from the Executive Engineer, in charge of II Circle, 11th Jan. 1889, No. 2158 K.S.

No. 7 I.

Submitted to Government.

Chepâk,
23rd January 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 1st February 1889, No. 37 I., Public Works.

The following estimate is sanctioned:—

Irrigation.
42. Major Works (Working Expenses).
Kistna Delta System.
Eastern Section.
III. Tools and Plant.
12. Miscellaneous.

Making tools for the Divisional store, Bezváda, estimate ... Rs. 748

2. This sanction has been registered as No. 154 I. of 1888-89.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with two enclosures.
" Examiner, Public Works Accounts, with duplicate abstract estimate.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 1st.

Recd. *Encl.*

G.O., 1st Feb. 1889, No. 37 I.

FEBRUARY.

Tools

Estimate for making — for the Divisional store, Bezváda, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From Colonel W. H. BURTON, R.E., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 23rd January 1889, No. 4953.

With reference to your memorandum No. V/3 N.A., dated 14th January 1889, I have the honor to surrender the sum of Rs. 800, allotted in G.O., No. 395 I., dated 6th July 1888, for improvements of Kalinjur tank in the North Arcot division. This amount is not required as the work was finished in the last official year with a saving of Rs. 800.

Order—dated 1st February 1889, No. 38 I., Public Works.

The sum of Rs. 800, surrendered by the Superintending Engineer, V Circle, will be credited to the reserve at the disposal of Government.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, V Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 1st.

Recd. *Encl.*

G.O., 1st Feb. 1889, No. 38 I.

FEBRUARY.

Kalinjur Tank, North Arcot Division

The allotment of Rs. 800, surrendered by the Superintending Engineer, V Circle, on account of improvements to the —, resumed and credited to the reserve.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From Colonel H. SMALLEY, R.E., Superintending Engineer, III Circle, to the Chief Engineer for Irrigation, dated Bellary, 8th January 1889, No. 2214.

With reference to para. 3 of your circular memorandum No. 14 G., dated 4th April 1884, I have the honor to request that the following modifications of allotments may be sanctioned under Provincial Irrigation and Navigation:—

Cuddapah Division.

43. Minor Works and Navigation Works for which neither Capital nor Revenue Accounts are kept.

Original Works, Major.

	Amount not required. RS.
Improvements to Pórumámilla large tank, item No. 19, budget, 1888-89	1,000

2. The above sum of Rs. 1,000 is not required, as the work cannot be completed till the tank has dried.

Order—dated 1st February 1889, No. 39 I., Public Works.

The sum of Rs. 1,000 surrendered will be held in reserve.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, III Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS,

Dated February, 1st.

Recd. *Encl.*

G.O., 1st Feb. 1889, No. 39 I.

FEBRUARY.

Funds

Certain modifications of allotments, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From J. W. MARTIN, Esq., Executive Engineer, Coimbatore Division, to the Superintending Engineer, IV Circle, dated Chinnadharapuram, 17th January 1889, No. 149.

I have the honor to inform you that I have just inspected Nunjathalayur * anicut and channel and find that a sum of Rs. 1,700 must be surrendered from the allotment of Rs. 8,472, for it is impossible to carry out, at present, some of the masonry works owing to water being in the channel being required for the cultivation.

* Estimate of Rs. 13,472, sanctioned in G.O., No. 363 I., dated 21st June 1888.

No. 5 E.I.

Submitted to the Chief Engineer for Irrigation, for information.

(Signed) A. C. SMITH, Lieut.-Col., R.E.,
Superintending Engineer, IV Circle.

22nd January 1889.

Order—dated 1st February 1889, No. 40 I., Public Works.

The sum of Rs. 1,700 surrendered will be held in reserve.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, IV Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 1st.

Recd. *Encl.*

G.O., 1st Feb. 1889, No. 40 I

FEBRUARY.

Nunjathalayur Anicut and Channel, Coimbatore Division

Rs. 1,700 surrendered from the grant for —, held in reserve.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following paper :—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 17th January 1889, No. 953 T.N.

I have the honor to request sanction of Government, under para. 1339 of the Public Works Code, to the execution by this department of the contribution work of clearing the bed of Kumattikottai drainage channel in the Tenkarai taluk, Tinnevelly division.

2. The estimate, which amounts to Rs. 2,600, has been approved by the Collector, and the trustees of the Tiruchendúr Devastanam, interested in the work, have contributed one-fourth the amount (Rs. 809), including the prescribed centage for Public Works supervision and tools and plant.

3. There is a swamp, locally called Kumattikottai, in the southern part of Tenkarai taluk near Kumattikottai and Arasur villages. This is annually filled in the north-east monsoon by the surplus of a group of minor tanks lying above Arasur village. The surface area of the swamp varies in different years according to the season, and when the rainfall is, as in the last north-east monsoon, unusually heavy, it submerges valuable cultivated lands along its margin, swamping, on some occasions, villages near it. The extra water entering the swamp in one season takes two or three ordinary seasons to subside to proper level.

4. It is stated that, as a partial relief against extraordinary seasons of rainfall, a high level drainage channel was dug at some date prior to 1858 from the north-east end of the swamp for a distance of $5\frac{1}{4}$ miles to meet the Karamanayár river, and that in 1858 the channel was improved at a cost of Rs. 2,000. Since then no expenditure appears to have been incurred on the channel, which is now almost entirely choked up.

5. The drainage channel has under it about 246 acres of nunjah lands, giving a revenue of Rs. 960. The Collector states that by the clearance of the channel 353 acres of Government and 118 acres of inam lands will be benefited, and that remissions amounting to Rs. 839-10-0 were granted during faslis 1294 to 1297 on account of lands left waste by want of drainage. The Executive Engineer states that he has satisfied himself that the people suffer great hardship from the flooding of their lands and villages and recommends the estimate for early execution.

6. As regards the future annual clearance of the channel, the Collector states that all villages under Kumattikottai, except those of Tiruppanipattu, Taruvai, appear to be unwilling to execute the annual repairs, since they do not form an item of kudimaramut.

7. The estimate provides for clearing the drainage channel to a bottom width of 18 feet with side slopes two to one and bed fall of 1 foot per mile.

Order—dated 1st February 1889, No. 41 I., Public Works.

The execution by this department of the work referred to is sanctioned under para. 1339 of the Public Works Code.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, VI Circle.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 1st.

Recd. *Encl.*

G.O., 1st Feb. 1889, No. 41 I.

FEBRUARY.

Kumattikottai Drainage Channel, Tinnevelly Division

Execution by the Public Works Department of the work of clearing the bed of —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From Colonel W. H. BURTON, Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 19th December 1888, No. 4389.

The Executive Engineer, Chingleput division, has surrendered the grant of Rs. 1,350 under revenue extensions and improvements of Chembrambakam tank system, as there is no sanctioned estimate to utilise the grant, nor is there any likelihood of any being sanctioned in the remaining part of the current official year. I have the honor to request that the amount surrendered may be resumed for transfer elsewhere.

ORDER—dated 5th February 1889, No. 43 I., Public Works.

The sum of Rs. 1,350, surrendered by the Superintending Engineer, V Circle, together with Rs. 311 for establishment charges, making a total of Rs. 1,661, will be transferred to Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept as shown in the margin, the amount transferred to repairs being held in reserve under that head.

	RS.
Repairs	1,334
Establishment	307
Tools and plant	20
Total ...	1,661

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, V Circle.
" Examiner, Public Works Accounts
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 5th.

Recd. *Encl.*

G.O., 5th Feb. 1889, No. 43 I.

FEBRUARY.

Chembrambakam Tank System

Grant of Rs. 1,350, surrendered by the Executive Engineer, Chingleput division, under revenue extensions and improvements of —, transferred to Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers:—

Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 2nd November 1888, No. 618.

W. WILSON, ESQ., M.A., C.S.

From the Collector of Nellore, dated 4th April 1888, No. 793-Ver.

Proceedings of the Board of Revenue, dated 5th May 1888, Mis. No. 931.

ABSTRACT.—Requesting the Collector of Nellore, with remarks, to revise the forecast statement of the probable revenue under the Sangam Project from 1884-85 to 1896-97 and resubmit it at an early date.

From the Collector of Nellore, dated 4th October 1888, No. 2401-Ver.

Telegram from the Collector of Nellore, dated 27th October 1888. "Government wet 46,386, inam 8,854 acres under Sangam Project."

G.O., dated 19th October 1888, Mis. No. 6246, Revenue.

Resolution—dated 2nd November 1888, No. 618.

The letters read above will be submitted to Government, with reference to G.O., dated 4th August 1887, No. 4534, and in continuation of Board's Proceedings, dated 2nd November 1887, No. 421.

2. In G.O., dated 28th July 1870, No. 1818, Public Works Department, the total area irrigable by the Sangam Project was estimated at 94,000 acres. In his forecast statement submitted with his first letter, the Collector omitted to take into account the area of inam lands (acres 8,854), from which no additional revenue could be expected and also acres 2,040, the area of the beds of tanks not likely to be abandoned. The Collector failed also to distinguish between land revenue proper and the revenue due to irrigation, and to allow for the amount of remissions likely to be saved to Government by the project. He was accordingly requested to revise his estimate and at the same time to obtain from the Executive Engineer a statement showing the probable ultimate increase of cultivation under each canal of the project and from the taluk officer an estimate of the lands available for irrigation and the survey numbers and settlement classification of the Government lands in each village.

3. A careful inquiry in each village would, it was believed, enable the Collector to prepare a more accurate forecast of the ultimate increase of area and revenue under the project than had before been made; but Dr. Macleane states that the returns obtained from the Public Works officers and from the tahsildar of Nellore afford no grounds for modifying his conclusions. The Board do not think that the exclusion of the inam and tank-bed lands from the calculations is correct. The inam lands are entitled to irrigation, and they should, therefore, be taken into account though no revenue may be derived from them. As regards the tank-bed lands, their extent has, in fixing the original estimate (paras. 18 and 19 of the District Engineer's letter in G.O., dated 2nd May 1879, No. 270 I.), been already reduced by the acres 2,040, which Dr. Macleane now again deducts. The Board would, therefore, retain the original estimate of acres 94,000 as the ultimate area likely to be irrigated under the Sangam Project.

4. The following is the forecast prepared by the Board of the financial results of this project when completed. There is no material difference between the results as calculated by the Collector and by the Board.

Area occupied in 1887-88 (fasli 1297)—

I. Government—

	Acres.	Percentage.
(1) Usual wet	38,930	= 92 per cent. of Government.
(2) Dry converted into wet ...	1,146	= 4 " "
(3) Dry crops watered	364	
(4) Waste brought in	1,460	= 4 " "
(5) Miscellaneous	246	
	42,146	= 80 per cent. of the total.

II. Inams—

(1) Charged	794	= 8 per cent. of inam.
(2) Free	9,128	= 92 per cent.
	9,922	= 20 per cent. of the total.
Grand Total ...	52,068	= 100 per cent.

The additional area likely to be brought under irrigation is acres 41,932, that is the difference between the proposed ultimate area of acres 94,000 and the extent occupied in 1887-88, viz., acres 52,068. It is impossible to define the particular lands that will be irrigated, but on the assumption that the future occupation will be distributed in the same proportion as at present the area to be supplied will be distributed thus :—

	Acres.
(1) Government, at 80 per cent.	33,546
(2) Inam at 20 "	8,386
Total ...	41,932

There are no inam lands entitled to free irrigation. There are acres 7,456 of Government usual wet.

The area to be supplied will, therefore, be distributed thus :—

	Acres.
I. Government—	
(1) Usual wet	7,456
(2) Other than usual wet	26,090
II. Inam—	
(1) Charged	8,386
(2) Free	...
Total ...	41,932

On the average of the last four years, the net water-rate on the charged area in occupation was Rs. 4-1-0; taking the rate at Rs. 4 an acre, the following are the financial results :—

		RS.
I. Government	26,090 × Rs. 4 =	1,04,360
II. Inam	8,386 × Rs. 4 =	33,544
	Total ...	1,37,904
Add assessment of additional area 13,663 to be brought under second-crop cultivation, *i.e.*, the difference between acres 2,363 occupied for second crop in fasli 1297 and acres 16,026, the ultimate area of second-crop at Rs. 2-8-0 per acre (the average charge for second crop on the figures for the last four years.) ...		34,158
Add 12 per cent. of the assessment, Rs. 39,843, on the Government "usual wet" to be irrigated, viz., acres 7,456, being the percentage of remissions that will be saved, calculated on the difference between the actuals and normals of the last four years (for which only figures are available), viz.		4,781

	RS.
Add 8 per cent. (average of the last three years) for enhanced assessment for improved irrigation on Government "usual wet" (assessed at Rs. 39,843)	3,187
Total ...	1,80,030
Deduct share of collection charges in the Revenue Department at 5 per cent.	9,001
Net direct receipts from additional irrigation	1,71,029
As regards indirect receipts, that is, the land assessment due to the work, it is observed that the available waste (wet and dry) is according to the Collector acres 22,128; according to the percentage on present occupation the acreage likely to be taken up will be acres 1,342 only; but as the extent of lands other than usual wet, *i.e.*, dry converted into wet and waste brought in, has been estimated at acres 26,090 (33,546 *minus* usual wet acres 7,456) and as the percentage of the occupation under these two heads is very nearly equal (*vide supra* para. 4), the extent of waste brought in and miscellaneous may be put down at acres 13,000. The land assessment on this averages Rs. 1–8–0 per acre, so that the enhanced land revenue — 13,000 × 1-8-0	19,500
Deduct collection charges at 5 per cent. ...	975
Net indirect receipts ...	18,525
Total, Direct and indirect receipts ..	1,89,554
This, with Rs. 80,411 credited to the work in fasli 1297, will bring up the total revenue to Rs. 2,69,965 or 7·6 per cent. on the proposed outlay of	35,69,049

5. It is expected that the ultimate increase will be reached in the thirteenth year after the commencement of the work as shown below :—

Year.	Revenue receipts and charges.								—
	Irrigated area at end of year.		Revenue due to work.			Collection charges in the Revenue Department.	Net earnings due to work		
	First crop.	Second crop.	Direct receipts.	Enhanced land revenue or indirect receipts.	Total.		Including enhanced land revenue.	Excluding enhanced land revenue.	
	ACS.	ACS.	RS.	RS.	RS.	RS.	RS.	RS.	
1295 (1885-86) ..	44,760	684	30,467	1,454	31,921	1,596	30,325	28,944	Actuals.
1296 (1886-87) ..	46,796	625	56,817	4,492	61,309	3,065	58,244	53,976	Actuals.
1297 (1887-88) ..	49,530	2,363	81,928	2,715	84,643	4,232	80,411	77,832	Actuals.
1298 (1888-89) ..	56,900	3,526	96,964	3,315	1,00,279	5,014	95,265	92,116	Estimate.
1299 (1889-90) ..	62,000	4,796	1,14,677	4,965	1,19,642	5,982	1,13,660	1,08,943	Estimate.
1300 (1890-91) ..	67,800	6,246	1,35,640	7,365	1,43,005	7,150	1,35,855	1,28,858	Estimate.
1301 (1891-92) ..	73,500	7,996	1,59,882	10,965	1,70,847	8,542	1,62,305	1,51,888	Estimate.
1302 (1892-93) ..	78,500	9,746	1,84,257	14,565	1,98,822	9,941	1,88,881	1,75,044	Estimate.
1303 (1893-94) ..	84,400	11,796	2,12,982	19,815	2,32,797	11,640	2,21,157	2,02,333	Estimate.
1304 (1894-95) ..	87,500	13,126	2,28,707	20,715	2,49,422	12,471	2,36,951	2,17,272	Estimate.
1305 (1895-96) ..	90,700	14,576	2,45,132	21,465	2,66,597	13,330	2,53,267	2,32,875	Estimate.
1306 (1896-97) ..	94,000	16,026	2,61,958	22,215	2,84,173	14,208	2,69,965	2,48,860	Estimate.

(True Extract.)

(Signed) P. RAJARATNA MUDALIAR,
Secretary.

No. 6717, Revenue.

Transferred to the Public Works Department (Irrigation Branch).

FORT ST. GEORGE,
10th November 1888.

(Signed) C. A. GALTON,
Ag. Secretary.

Note by the Chief Engineer for Irrigation.

No. 81.

With their Proceedings, No. 618, dated 2nd November 1888, the Board of Revenue submit revised forecast statements of irrigation revenue under the Sangam Anicut project. The ultimate area of irrigation is taken as 94,000 acres, the area originally estimated. The revenue is estimated at Rs. 2,84,173, or Rs. 46,173 more than the original estimate, the increase being chiefly due to the revenue expected to be realized on second crop which does not seem to have been taken into account originally.

2. *Increase in revenue due to the project works during* 1887-88.—The area irrigated during 1887-88 was 49,530 acres for first crop and 2,363 acres for second crop. The total revenue assessed was Rs. 2,66,463, of which Rs. 56,266 were due to "land" and Rs. 2,10,197 to "irrigation." Remissions and other deductions amounted to Rs. 6,126, leaving a net revenue of Rs. 2,04,071, due to "irrigation." Of this, Rs. 1,22,143 are due to old irrigation, leaving Rs. 81,928 due to the project. The share of land revenue, which would not have been realized but for the project, amounted to Rs. 2,715. The total revenue due to the project is thus Rs. 84,643.

3. *Anticipated increase in revenue due to project works subsequent to* 1887-88.—The area occupied for irrigation during 1887-88 being 52,068 acres, the area available for extension of irrigation to reach the ultimate area is 41,932 acres, of which 7,456 acres will be old irrigation and 34,476 acres new irrigation. The revenue to be derived from the former is estimated at Rs. 39,843 and that from the latter at Rs. 1,37,904, assuming a rate of Rs. 4 per acre. One-fifth of Rs. 39,843, the revenue to be derived from the extent of old irrigation, is taken to be the share due to the project. This, together with the revenue expected from the extent of new irrigation, will amount to Rs. 1,45,872. The ultimate area of second-crop irrigation is assumed to be 16,026 acres. Deducting from it 2,363 acres irrigated during 1887-88, the area available for further extension will be 13,663 acres and the revenue on this area is estimated at Rs. 34,158 at Rs. $2\frac{1}{2}$ an acre. The share of "land" revenue on 13,000 acres, which, it is assumed, would not be cultivated but for the project, is estimated to amount to Rs. 19,500 at Rs. $1\frac{1}{2}$ an acre. The total estimated increase of revenue due to project works will, therefore, amount to Rs. 1,99,530 as shown below :—

	RS.
First crop	1,45,872
Second crop	34,158
Share of land revenue	19,500
Total ...	1,99,530

4. *Gross estimated increase in revenue due to project works, excluding miscellaneous receipts.*—If this amount be added to Rs. 84,643, the revenue derived from the project during 1887-88 as shown in paragraph 2 above, the total will be Rs. 2,84,173. In the accompanying statement marked *A.*, the original and revised estimates of revenue are compared. Deducting collection charges at 5 per cent., the amount of revenue will be Rs. 2,69,965.

5. *Gross estimated increase in revenue due to project works, including miscellaneous receipts.*—The miscellaneous receipts collected in the Public Works Department during 1887-88 on account of the project amounted to Rs. 864. The Superintending Engineer estimated the collections during the ensuing official year at Rs. 600. The collections in subsequent years are estimated as shown below :—

	RS.
1890-91	600
1891-92	700
1892-93	800
1893-94	900
1894-95	1,000
1895-96	1,035

Including miscellaneous receipts collected in this department the total ultimate revenue will be Rs. 2,71,000.

6. *Working expenses.*—The grant provided for working expenses of the project in the preliminary issue of the budget estimate for next year is Rs. 45,500, or Rs. 47,483 including indirect charges. In order to admit of minor improvements required for the extension of irrigation being carried out and to provide for the proper maintenance of new banks, &c., it is considered desirable that Rs. 47,000 should be annually provided for expenditure on revenue account until 1893-94, after which year the original estimate of annual ultimate working expenses, viz., Rs. 34,200, will, it is thought, prove sufficient.

7. Revised forecast statements prepared in this office in the forms prescribed by the Government of India are attached to this note. Table No. III, which has been duly accepted by the Board of Revenue, show that the ultimate net revenue after meeting working expenses will amount to 7·89 per cent. on the total estimate of direct charges, or 6·3 per cent. on the total including indirect charges against 5·26 per cent. anticipated when the project was sanctioned. The increase in the rate of percentage return, notwithstanding the increase of the revised over the original estimates of capital outlay, is considered satisfactory.

8. The project will be completed in 1890-91, the ultimate extent of irrigation will be reached in 1896-97, and at the end of 1898-99 the accumulated net revenue is expected to amount to Rs. 1,25,997 more than the total charge for interest.

CHEPÂK, (Signed) G. T. WALCH,
18th January 1889. Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ENCLOSURES.

A.—SANGAM ANICUT SYSTEM.

The revised and original estimates of revenue compare as shown below :—

—	ORIGINAL ESTIMATE (*vide* PROCEEDINGS OF MADRAS GOVT., No. 270 I., DATED 2ND MAY 1879).			REVISED ESTIMATE.							
				Irrigated in 1887-88.			Further extension.			Total	
	Area.	Rate.	Amount.	Area.	Amount.	Average rate.	Area.	Rate.	Amount.	Area, columns 5 and 8.	Revenue, columns 6 and 10.
1	2	3	4	5	6	7	8	9	10	11	12
	ACS.	RS. A. P.	RS.	ACS.	RS.	RS. A. P.	ACS.	RS. A. P.	RS.	ACS.	RS.
Old irrigation .	40,629	0 7 0	17,775	38,930	* 62,613	1 9 9	7,456	1 1 1	7,968	46,386	70,581
New irrigation ..	34,517 10,000	5 8 0 4 8 0	1,89,844 45,000	4,010	† 14,617	3 10 4	34,476	4 0 0	1,37,904	38,486	1,52,521
Inam lands irrigated free of charge ..	8,854	..	..	9,128	..	..	..	..	..	9,128	..
Total ..	94,000	..	2,52,619	52,068	77,230	..	41,932	..	1,45,872	94,000	2,23,102
Share of enhanced land revenue ..	..	..	..	1,460	2,715	1 13 9	13,000	1 8 0	19,500	14,460	22,215
Second crop ..	..	..	..	2,363	‡ 4,698	1 15 10	13,663	2 8 0	34,158	16,026	38,856
Deduct amount reduced by the Board of Revenue to be on the safe side ..	..	..	14,619	..	..	..	..	..	..	..	..
Net Total ..	..	..	2,38,000	..	84,643	..	..	..	1,99,530	..	2,84,173

* Includes not only the savings of remissions but also the settlement increase.

† Exclusive of Rs. 899, the average amount which would have been realized irrespective of the project. If this amount be included, the average rate per acre will be Rs. 3-13-11.

‡ Exclusive of Rs. 1,769, the average amount which would have been realized irrespective of the project. If this amount be included, the average rate per acre will be Rs. 2-11-10.

Nellore District.

49. Capital Expenditure on Irrigation Works (not charged against Revenue). Sangam Anicut Project.

TABLE I.—Summary of actual and estimated direct charges on capital account.

Year.	Works.	Establishment.	Tools and plant.	Loss by exchange.	Total.	Deduct receipts on capital account.	Net total.
	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Actuals to end of 1887-88 ..	22,74,000	4,50,917	1,25,644	170	28,50,731	1,648	28,49,083
Estimate for 1888-89	85,115	17,506	..	..	1,02,621	5,000	97,621
Do. for 1889-90	62,659	12,341	..	..	75,000	20,000	55,000
Do. for 1890-91	28,226	4,236	4,186	..	36,648	38,352	— 1,704
Total ..	24,50,000	4,85,000	1,29,830	170	30,65,000	65,000	30,00,000

TABLE II.—Summary of actual and estimated indirect charges on capital account.

Year.	Capitalized abatement of land revenue.	Leave and pension allowances.	Total.
	RS.	RS.	RS.
Actuals to end of 1887-88 ..	5,82,059	65,247	6,47,306
Estimate for 1888-89	11,250	2,451	13,701
Do. for 1889-90	11,250	1,728	12,978
Do. for 1890-91	85,421	594	86,015
Total ..	6,89,980	70,020	7,60,000

TABLE III.—Estimate of the growth of irrigation and revenue receipts and charges.

Year.	AREA IRRIGATED AT END OF EACH YEAR.		ESTIMATE OF REVENUE RECEIPTS AND CHARGES.						Remarks.
	First crop.	Second crop.	Gross revenue. Direct.	Gross revenue. Indirect.	Gross revenue. Total.	Working expenses, both direct and indirect.	Net revenue. Including indirect revenue.	Net revenue. Excluding indirect revenue.	
1	2	3	4	5	6	7	8	9	10
	ACS.	ACS.	RS.	RS.	RS.	RS.	RS.		
Actuals to end of 1887-88.	..	..	864	1,74,691	1,75,555	77,271	98,284	Water-rates are collected in the Revenue Department and treated as indirect revenue. If they are excluded there will be no net revenue.	The ultimate net revenue will be 6·3 per cent. on the total cost of the project including indirect charges.
Estimate for 1888-89 ..	56,900	3,526	..	95,265	95,265	39,555	55,710		
Do. for 1889-90 ..	62,000	4,796	600	1,13,660	1,14,260	47,483	66,777		
Do. for 1890-91 ..	67,800	6,246	600	1,35,855	1,36,455	47,000	89,455		
Do. for 1891-92 ..	73,500	7,996	700	1,62,305	1,63,005	47,000	1,16,005		
Do. for 1892-93 ..	78,500	9,746	800	1,88,881	1,89,681	47,000	1,42,681		
Do. for 1893-94 ..	84,400	11,796	900	2,21,157	2,22,057	47,000	1,75,057		
Do. for 1894-95 ..	87,500	13,126	1,000	2,36,951	2,37,951	34,200	2,03,751		
Do. for 1895-96 ..	90,700	14,576	1,035	2,53,267	2,54,302	34,200	2,20,102		
Do. for 1896-97 ..	94,000	16,026	1,035	2,69,965	2,71,000	34,200	2,36,800		
Do. for 1897-98 ..	94,000	16,026	1,035	2,69,965	2,71,000	34,200	2,36,800		
Do. for 1898-99 ..	94,000	16,026	1,035	2,69,965	2,71,000	34,200	2,36,800		
Total ..	..	..	9,604	23,91,927	24,01,531	5,23,309	18,78,222		

TABLE IV.—Estimate of interest charges and surplus revenue.

Year.	Direct charges during each year.	Direct charges to end of each year.	Interest at 4 per cent. on outlay to end of previous year and at 2 per cent. on outlay of the year.	Net revenue, column 8, table III.	Net revenue less interest.	Interest less net revenue.
	RS.	RS.	RS.	RS.	RS.	RS.
Actuals to end of 1887-88 ..	..	28,49,083	4,37,309	98,284	..	3,39,025
Estimate for 1888-89	97,621	29,46,704	1,15,915	55,710	..	60,205
Do. for 1889-90	55,000	30,01,704	1,18,967	66,777	..	52,190
Do for 1890-91	— 1,704	30,00,000	1,20,034	89,455	..	30,579
Do. for 1891-92	..	30,00,000	1,20,000	1,16,005	..	3,995
Do. for 1892-93	..	30,00,000	1,20,000	1,42,681	22,681	..
Do. for 1893-94	..	30,00,000	1,20,000	1,75,057	55,057	..
Do. for 1894-95	..	30,00,000	1,20,000	2,03,751	83,751	..
Do. for 1895-96	..	30,00,000	1,20,000	2,20,102	1,00,102	..
Do. for 1896-97	..	30,00,000	1,20,000	2,36,800	1,16,800	..
Do. for 1897-98	..	30,00,000	1,20,000	2,36,800	1,16,800	..
Do. for 1898-99	..	30,00,000	1,20,000	2,36,800	1,16,800	..
Total ..	..	..	17,52,225	18,78,222	6,11,991	4,85,994
					1,25,997	

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 28th January 1889, Mis. No. 370.

W. WILSON, ESQ., M.A., C.S.

From the Chief Engineer for Irrigation, dated 18th January 1889, Mis. No. 13.

Resolution—dated 28th January 1889, Mis. No. 370.

The Board approve the revised forecast statements of Sangam Anicut project received with the above letter.

2. Table III will be countersigned and returned to the Chief Engineer for Irrigation with the other enclosures.

(True Extract.)

(Signed) P. RAJARATNA MUDALIAR,
Secretary.

To the Chief Engineer for Irrigation, with enclosures.

ORDER—dated 5th February 1889, No. 44 I., Public Works.

The revised forecast statements of the Sangam Anicut project prepared by the Acting Chief Engineer for Irrigation are approved and will be forwarded to the Government of India, with the request that the revised estimate submitted with

Proceedings of Madras Government, No. 393 I., dated 1st July 1887, may be sanctioned as soon as possible, the return now anticipated being more than that estimated when the project was first sanctioned.

(Here enter No. 45 I., dated 5th February 1889.)

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

ENDORSEMENT—dated 5th February 1889, No. 45 I., Public Works.

Forwarded accordingly.

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 5th.

Recd. *Encl.*

G.O., 5th Feb. 1889, Nos. 44 I., 45 I.

FEBRUARY.

Sangam Anicut Project

Forwarding revised forecast statements of the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From the Officiating Under-Secretary to the Government of India, Public Works Department (Account—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Calcutta, 30th January 1889, No. 10 A.I.

With reference to your letter No. 757 I., dated 20th ultimo, I am directed to state that the Government of India has been pleased to sanction an additional grant of Rs. 15,100 under 42. Major Works, Working Expenses, Imperial, and to withdraw the sum of Rs. 34,400, surrendered from the existing allotment under 49. Irrigation—Capital expenditure not charged against Revenue. The grant under the former head will now stand at Rs. 10,55,700 and under 49. Irrigation at Rs. 15,85,000.

ORDER—dated 7th February 1889, No. 51 I., Public Works.

Communicated to the officers concerned for information.

(True Extract.)

(Signed) G. T. WALCH
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " II "
" " III "
" " IV "
" " VI "
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 7th.

Recd. *Encl.*

G.O., 7th Feb. 1889, No. 51 I.

FEBRUARY.

Funds

Letter from the Government of India sanctioning an additional grant of Rs. 15,100 under 42. Major Works, Working Expenses, Imperial, and withdrawing the sum of Rs. 34,400 surrendered under 49. Capital expenditure, and to officers concerned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From Colonel W. H. BURTON, R.E., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 1st February 1889, No. 5183.

The Executive Engineer, Chingleput division, has now surrendered a sum of Rs. 3,000 from the grant of Rs. 5,000 for reconstructing sluices of Uttramallur tank. He explains that there has been great difficulty to procure a contractor in that locality earlier.

2. Eventually he has got one contractor, who, in the opinion of the Executive Engineer, is unable to utilize the grant before the end of March 1889. I have therefore the honor to request that you will transfer the amount elsewhere from the Chingleput division.

Order—dated 8th February 1889, No. 54 I., Public Works.

The existing grant for the work is Rs. 3,000 and not Rs. 5,000 as stated by the Superintending Engineer, Rs. 2,000 having already been withdrawn in G.O., No. 701 I., dated 23rd November 1888. The further surrender of Rs. 1,000 will be credited to the reserve under Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept—Original Works.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, V Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 8th.

Recd. *Encl.*

G.O., 8th Feb. 1889, No. 54 I.

FEBRUARY.

Uttramallur Tank, Chingleput Division

Orders on letter from the Superintending Engineer, V Circle, surrendering a portion of the grant for reconstructing sluices of —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—again the following paper :—

G.O., dated 19th December 1888, No. 3978 W., Public Works.

Read—also the following paper :—

Office-note from the Examiner, Public Works Accounts, dated 31st January 1889, No. 132.

I beg to forward, herewith, a statement showing outlay incurred against existing grants for Tank Restoration parties and for lithographing plans in the Central office, called for in your office-note No. 18, dated 23rd January 1889.

No. 9 I.

Submitted to Government with the recommendation that the marginally-noted sums may be withdrawn from the existing grants for survey establishment in connection with Tank Restoration scheme. Rs. 920 of the amount withdrawn may be reappropriated to meet the cost of the survey establishment required for No. 6 Party and the balance Rs. 10,000 may be transferred to Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept—Ordinary Works—and distributed as shown below, the amount available for repairs being held in reserve to meet future demands, should there be any :—

	RS.
No. 1 Party	2,900
Nos. 2 and 5 Parties	4,800
No. 3 Party	2,000
" 4 "	720
Central office	500
Total ...	10,920

	RS.
Repairs	8,032
Establishment	1,847
Tools and plant	121
Total ...	10,000

CHEPÂK,
4th February 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 8th February 1889, No. 55 I., Public Works.

The revised statement showing the amount required for the survey establishment in connection with Tank Restoration scheme for January and February 1889, referred

to in para. 4 of G.O., No. 3978 W., dated 19th December 1888, is approved and the transfer of funds proposed by the Chief Engineer for Irrigation is sanctioned.

2. The amount available for repairs will be held in reserve.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, III Circle.
„ „ „ IV „
„ „ „ V „
„ „ „ VI „
„ Examiner, Public Works Accounts, with the revised statement in original.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 8th.

Recd. *Encl.*

G.O., 8th Feb. 1889, No. 55 I.

FEBRUARY.

Survey Establishment

Revised statement showing amount required for the — in connection with Tank Restoration scheme for January and February 1889 approved and certain transfer of funds sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From Colonel J. PENNYCUICK R.E., Superintending Engineer, Periyár Project Works, to the Chief Engineer for Irrigation, dated Periyár, 18th January 1889, No. 91 P.R.

I have the honor to submit, herewith, an application for modification of allotments involving a surrender of Rs. 1,06,130 on the total grant of Rs. 7,67,000 for this project.

2. Several causes have combined to hinder the rapid prosecution of the works, the principal being the abnormally unfavorable nature of the weather and the want of sufficient subordinate staff.

3. With regard to the first cause, it will be sufficient to quote from a report received from the Executive Engineer, No. I Periyár division :—

"The establishment returned to the hills on the 23rd June and from the 25th it rained every day for the rest of that month. In July there were only six days without some rain; in August only two. In September for the first time we had three consecutive fine days and only ten during the whole month. For the first part of October the weather was pretty fine and work began to make some appreciable progress; then from the 25th to 5th November we had ten days' continuous rain. From the 12th November we had the first really fine weather which continued to the end of the month, with the exception of an inch on the 25th. December opened with 3 days of rain and the weather was fine for the rest of the month except for a most unseasonable storm with two inches of rain * on the 16th. These facts will, I think, speak for themselves as to the difficulties in the way of progress with work as well as in the supply of materials, chiefly lime, from below the ghât."

* Five inches at Thekady.

4. It must be remembered that rain keeps away labor in addition to interfering with the work of the men who are actually present.

5. In June, July and November rain is to be expected and our plans are laid accordingly; it was the abnormal rain in August and still more in December which upset our arrangements.

6. The want of efficient subordinates has been repeatedly commented on in my monthly reports; it was not till the end of October that this want was satisfied.

7. During last season a large number of workmen were employed on daily pay and from want of sufficient supervision the cost of work was somewhat extravagant; this season we have insisted on piece-work for everything capable of measurement with excellent results as regards economy, and no doubt this has operated to some extent in reducing the number of applicants for employment.

8. With regard to the distribution of the grant between individual works, the reduction of Rs. 2,000 under "Preliminary expenses" is really a *boná fide* saving, as it is probable that no further expenditure will be required under this head.

9. The expenditure on the main dam will fall considerably below the estimated amount of Rs. 1,00,000. It was hoped that the preliminary work would all be completed and the machinery at work by the end of December, and that we should have two months of steady work on the main dam; this has been found impossible and if we get the foundations in before stopping work for the season it will be as much as we can do. It is not impossible that a further reduction will be made hereafter by transfer to the "temporary dams," as the estimate for the latter will most likely be exceeded owing to the incessant interruptions from floods, but this will not affect the total grant.

10. The allotment for the right bank will, it is believed, be fully utilised.

11. I cannot understand how the grant of Rs. 48,710 for the water-shed cutting was arrived at. The original budget, submitted by me in October 1887, worked up to a total grant of Rs. 6,00,000 and was based on the original estimate, in which the cost of special machinery was included in the rates for work. In this the grant for the water-shed cutting was entered at Rs. 20,000 or 15 per cent. of the original estimate which included the cost of special plant. The distribution on the revised estimate to work up to the increased grant of Rs. 7,67,000 was made by Mr. Taylor during my absence in England and finally revised by your No. VI-35 M.D. of 18th April 1888. Mr. Taylor appears to have entered Rs. 63,790 for the water-shed cutting, being 53 per cent. of the revised estimate of Rs. 1,20,000, and this was reduced in your office to Rs. 48,710. I am at a loss to understand how Mr. Taylor could have supposed that the former sum (which would almost suffice to complete the work) could be spent in a single season. In point of fact the reduced grant of Rs. 23,710 will complete the cutting to a much greater length than was contemplated in this season, the ground having been found much more favorable than was expected. There will probably be a substantial saving on the estimate for this work.

12. The beginning of work on the water-shed tunnel has been delayed by the causes already mentioned and in addition by the dilatory procedure of the contractor employed to execute the open cutting at the northern end.

13. A good deal of the reduction of Rs. 40,000 on the grant for buildings is really saving; the original grant of Rs. 95,000 included about Rs. 5,000 for repairs in addition to the full amount required for the completion of the buildings; next to nothing has actually been spent on repairs, while the estimate for construction has already been reduced by Rs. 6,300 and the cooly lines and quarters for native subordinates have cost considerably less than was expected.

14. Under miscellaneous a small increase is required as the estimate for the dams on the Muliya Panjan will probably be slightly exceeded for the same reason as the temporary dams on the Periyár.

15. The entry of Rs. 1,75,000 as the total grant for the project for "Tools and Plant" was made in your office (*vide* your memorandum above quoted). It was apparently based on the note to the original budget estimate sent up from the VI Circle office, in which Rs. 1,70,000 was entered as the sum required for machinery from England; but to this should have been added the cost of carriage and erection, maintenance and of plant locally purchased.

16. The actual expenditure to end of December is Rs. 1,03,600 and the liabilities for machinery, which we know to have been despatched from England but for which the bills have not yet been received, amount to about Rs. 1,00,000 more. The total expenditure is not likely to be less than Rs. 2,25,000.

17. The net result is a reduction of Rs. 1,31,000 on works and Rs. 30,130 on establishment and an increase of Rs. 55,000 for tools and plant.

18. This statement has reference only to the head works; it is possible that a further surrender will have to be made from the grant for No. II Periyár Division, but it is hoped that this will be of small amount.

ENCLOSURE.

PERIYAR PROJECT.

Application for additions or modifications of allotments (irrigation) for 1888-89.

Division.	Main head.	Sub-head.	Name of work.	Amount of estimate.	Existing grant for 1888-89.	Modification of allotments applied for	
						Reduction.	Increase.
			Capital Expenditure on Public Works (not charged against Revenue).	RS.	RS.	RS.	RS.
No. I Periyár.	Irrigation and Navigation.	1. Head works	A. Preliminary expenses ..	85,000	5,000	2,000	..
			C. Main dam	6,91,000	1,00,000	40,000	..
			C. Temporary dams	15,000	15,000	..	..
			C. Right bank escape	1,37,000	25,000	..	..
			C. Water-shed cutting	1,20,000	48,710	25,000	..
			C. Water-shed tunnel	2,61,000	60,000	30,000	..
			K. Buildings	1,47,000	95,000	40,000	..
			O. Miscellaneous	46,000	24,000	..	6,000
			Total ..	..	..	1,37,000	6,000
			Establishment, 23 per cent. on works.	..	..	30,130	..
			III. Tools and plant	..	1,70,000	..	55,000
			Grand Total ..	..	..	1,67,130	61,000

PERIYAR,
18th January 1889.

(Signed) J. PENNYCUICK, Colonel, R.E.,
Superintending Engineer.

Memorandum to the Superintending Engineer, Periyár Project, dated 25th January 1889, No. 13 M.D.

From Colonel J. PENNYCUICK, R.E., Superintending Engineer, Periyár Project Works, to the Chief Engineer for Irrigation, dated Thekady, 29th January 1889, No. 159 P.R.

In reply to your No. 13 M.D. of 25th instant, I have the honor to state that a proposal for redistribution of allotments for No. II Periyár Division will be sent shortly.

2. The Executive Engineer assures me that the whole grant can be spent, and I see no reason why it should not be.

3. A sum of Rs. 1,06,130 has been surrendered from the grant for No. I Periyár Division in this office No. 91 P.R. of 18th instant.

ORDER—dated 9th February 1889, No. 56 I., Public Works.

The amount of Rs. 1,06,130, surrendered from the grant for the Periyár Project under 49. Irrigation, will be credited to the reserve.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, Periyár Project.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 9th.

Recd. *Encl.*

G.O., 9th Feb. 1889, No. 56 I.

FEBRUARY.

Periyar Project.

Rs. 1,06,130 surrendered from the grant for the —, credited to the reserve.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

Telegram from the Superintending Engineer, I Circle, to the Joint Secretary to Government, Public Works Department, Irrigation Branch, dated Dowlaishweram, 5th February 1889.

Please resume Rs. 250 of Rs. 986 allotted for river survey (G.O., No. 529 I., September 8th).

ORDER—dated 9th February 1889, No. 57 I., Public Works.

The sum of Rs. 250, surrendered by the Superintending Engineer, I Circle, will be held in reserve under Agricultural Original works.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 9th.

Recd. *Encl.*

G.O., 9th Feb. 1889, No. 57 I.

FEBRUARY.

Godavari River

Rs. 250, surrendered by the Superintending Engineer, I Circle, from the allotment for survey of — resumed and held in reserve.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

Telegram from the Secretary to the Government of India, Public Works Department, to the Secretary to the Government of Madras, Public Works Department, dated Calcutta, 1st February 1889, No. A. 17.

Your 3-I., 8th ultimo. Submit early programme. Tank Restoration Works. Grant dependent on approval thereof. Lapse appears probable under 49. Examine and wire what further surrender anticipated.

ORDER—dated 9th February 1889, No. 58 I., Public Works.

The following deferred telegram will be sent in reply to the Government of India :—

"Your telegram, A. 17, 1st instant. Inquiry about tank restoration programme will be replied to separately. Please accept net surrender of Rs. 1,30,400 under 49. Irrigation reducing grant for—

	RS.
Periyár by	1,06,130
Sangam by	34,440
Barúr by	2,846

and increasing—

Kistna by	7,366
Pennér by	5,650"

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" " " IV "
" " " Periyár Project
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 9th.

Recd. *Encl.*

G.O., 9th Feb. 1889, No. 58 I.

FEBRUARY.

Funds

Telegram to the Government of India intimating that the inquiry about tank restoration programme will be replied to separately and surrendering certain —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From Lieutenant-Colonel R. R. E. DRAKE-BROCKMAN, R.E., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 30th January 1889, No. 678 G.L.

I have the honor to submit, herewith, for the sanction of Government, a fourth application for additional or modification of allotments, and to inform you that the modifications, &c., therein entered are in addition to those included in the third application * and its supplemental one.†

* Sent with No. 534 G.L., dated 27th November 1888.
† Sent on 30th November 1888.

2. With reference to your circular memorandum No. 15 G., dated 15th November 1888, I have the honor to state that the additional funds required under "43. Minor Works and Navigation" are also included in the present application.

3. A supplemental application for the requirements in the Vizagapatam and Ganjam divisions ‡ will be submitted as soon as the applications are received from the Executive Engineers, to whom reminders have been sent for the same.

‡ *Nil* applications have just been received.

Order—dated 11th February 1889, No. 60 I., Public Works.

The following transfers of funds are sanctioned:—

42. Major Works (Working Expenses).
Godávari Delta.
Western Division.

From	RS.	*To*	RS.
Extensions and improvements ...	2,000	Maintenance and repairs	2,000

43. Minor Works and Navigation.
Agricultural Works.

River Embankments. Godávari, Western.	RS.	River Embankments. Godávari, Western.	RS.
		Ralla Calva sluice at 20 miles 6 feet—	
Minor Original works	2,000	130 yards of river embankment from	
Do. repairs	1,570	Vijeshweram to Polavaram ...	2,000
Original Works reserve	250	Godávari, Central, repairs	1,820
Total ...	3,820	Total ...	3,820

2. There are no funds available to meet the other demands.

3. The Superintending Engineer surrenders Rs. 119 under 49. Irrigation. As the amount is small it is considered undesirable to address the Government of India to accept its surrender. The Superintending Engineer should, therefore, arrange to utilise this amount on any other work of the delta.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 11th.

Recd *Encs*

G.O., 11th Feb. 1889, No. 60 I.

FEBRUARY.

Funds

Certain transfers of —, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 30th January 1889, No. 474 G.L.

I have the honor to forward, herewith, for your approval and sanction of Government, fourth application for modifications of allotments for irrigation works for 1888-89.

2. The several items relating to B. land, which require alterations, have been omitted in the above application, and the lump sum surrenders made under this head in my letter No. 2225 K.S., of the 22nd instant, have been entered instead. All bills paid before the close of the year can be adjusted against the balances for each division, which should be entered as the last item and should be considered as a *reserve*. This practice will save frequent alterations of grants for each work.

3. The reasons for the several surrenders made are given in the remarks column.

II CIRCLE.

FOURTH application for additions and modifications of allotments for Irrigation Works for 1888-89.

Division.	Main and sub heads.	Names of works.	Existing grant.	Modification of allotments applied for.		Modification of allotments proposed.		Remarks.
				Reduction.	Increase.	Reduction.	Increase.	
1	2	3	4	5	6	7	8	9
		CAPITAL EXPENDITURE ON PUBLIC WORKS NOT CHARGED AGAINST REVENUE.	RS.	RS.	RS.	RS.	RS.	
		49. *Irrigation.*						
Kistna, Eastern.	(1) C ..	Reflooring Bezváda under-sluices	(a) 965	**487**	..	487	..	No more work can be done during this official year.
	(1) K ..	Executive Engineer's quarters, Bezváda ..	4,000	**1,000**	..	1,000	..	Land is not yet handed over.
		Bank Canal.						
	(2) I ..	Lock at Yenamalakuduru	(a) 15,000	**6,000**	..	6,000	..	Land not yet handed over.
		Ryves' Canal.						
	(2) G ..	Bridge at Kadavakollu	(a) 1,493	..	17	..	17	To cover the outlay already incurred.
		Masulipatam Canal.						
	(2) FI ..	Improvements to Sultanagaram under-tunnel ..	(a) 533	..	76	..	76	To cover the expenditure already incurred.
		Ellore Canal.						
	(2) O ..	Ampapuram cattle-crossing	..	..	350	..	350	
	(2) O ..	Buddavaram do.	..	..	300	..	300	
	(2) O ..	Kodurupad do.	..	..	300	..	300	
	(2) O ..	Wutlur do.	650	**100**	..	100	..	
	(4) C ..	Bridge on Vadlamannad affluent	3,000	**1,018**	..	1,018	..	Surrendered, the allotment being in excess of the estimate amount.
	(4) L ..	Excavating Inampudi drain	10,000	..	2,000	..	2,000	Rs. 1,500 required for sectioning work already done and another 500 worth of work can be done. The increase is necessary.
	B. Land ..	Total provision for compensation	8,910	**4,000**	..	..	..	Please see this office letter No. 2225 K.S., of 22nd January 1889.
		Total ..	..	**12,605** 3,043	3,043 ..	8,605 3,043	3,043 ..	
		Net surrender ..	..	**9,562**	..	5,562	..	
		Ryves' Canal.						
	(3) C ..	Improvements, Mustaphakhancodu	..	..	9	..	9	
		Pulleru Canal.						
	(3) C ..	Drop at 2nd mile of Golivepalli channel ..	..	..	66	..	66	To cover the expenditure already incurred.
	(3) C ..	Do. at 3rd mile of do. ..	..	..	54	..	54	
	(3) C ..	Do. at 4th mile of do. ..	..	..	3	..	3	

Gudiváda	(3) C	Head sluice to Chittram channel	..	..	10	..	10	
	(3) L	Motur channel extension	1,000	100	..	100	..	
	(3) L	Gudiváda channel	..	..	10	..	10	To cover the expenditure already incurred.
		Polraz Canal.						
	(2) I	Tidal lock at Tadivada	(a) 1,700	300	..	300	..	
	(2) I	Lock establishment sheds at Tadivada	341					
	(2) O	Gudlavalleru ramp	200	60	..	60	..	
	(2) O	Guraza and Kodur ramp	340	156	..	156	..	
	(2) O	Konukollu ramp	..	..	14	..	14	To cover the expenditure already incurred.
	(3) C	Head sluice to Narasayapalem channel	500	100	..	100	..	
	(3) C	Regulator to do.	300	100	..	100	..	
	(3) C	Lift at 2 miles 4,733 feet of south side channel of Polraz canal.	78	78	..	78	..	
	(3) C	Lift at 4 miles 2,553 feet of south side channel of Polraz canal.	46	46	..	46	..	
	(3) C	Head sluice to Tadivada channel	700	300	..	300	..	
	(3) C	First regulator to Seetanapalli channel at ⅓ mile.	250	100	..	100	..	
	(3) C	Second regulator to Seetanapalli channel at ½ mile.	(a) 20	..	100	..	100	
	(3) L	Narasayapalem channel	400	160	..	160	..	
	(3) L	South side channel of Polraz canal	(a) 1,266	230	..	230	..	
		Polraz Drain.						
	(4) L	Polraz main drain	(a) 12,354	..	800	..	800	
		Pedakommileru Drain.						
	(4) L	Pedakommileru main drain	(a) 8,750	..	800	..	800	
	(4) L	Lingala or Chinakommileru affluent	(a) 1,300	400	..	400	..	
	B. Land	Total provision for compensation	(b) 14,906	11,000	..	..	..	Please see this office letter No. 2225 K.S., of 22nd January 1889.
		Total ..	..	13,130	1,866	2,130	1,866	
			..	1,866	..	1,866	..	
		Net surrender ..	..	11,264	..	264	..	
Kistna, Western.	(1) K	Executive Engineer's quarters at Duggirala	4,000	1,000	..	1,000	..	It will be impossible to spend the full allotment partly because of want of time and partly owing to the difficulties of conveyance. Punts are fully employed and are insufficient in number and private boats will not take up the carriage, because the short distance does not pay them.
	(1) K	Assistant do. do.	2,000	1,000	..	1,000	..	
		Commamur Canal.						
	(2) F	Outlet near Nallamada surplus sluices	6,673	2,000	..	2,000	..	There is more earthwork than was anticipated; a large bank has to be removed. All materials have been conveyed, but expenditure on construction cannot go on till the bank is removed.
	(2) O	Cattle-crossing at Appapuram	600	600	..	600	..	Estimates have been returned not approved, and there is not time or means now of spending the allotments.
	(2) O	Do. at Swerna	800	600	..	600	..	

(a) Denotes grants as applied for in the third modification statement sent on the 17th December 1888 and not yet sanctioned by Government.
(b) These sums have been corrected in the office of the Chief Engineer for Irrigation.

Fourth application for additions and modifications of allotments for Irrigation Works for 1888-89—*cont.*

Division.	Main and sub heads.	Names of works.	Existing grant.	Modification of allotments applied for. Reduction.	Modification of allotments applied for. Increase.	Modification of allotments proposed. Reduction.	Modification of allotments proposed. Increase.	Remarks.
1	2	3	4	5	6	7	8	9
			RS.	RS.	RS.	RS.	RS.	
		CAPITAL EXPENDITURE ON PUBLIC WORKS NOT CHARGED AGAINST REVENUE—*cont.*						
		49. *Irrigation*—cont.						
		Commamur Canal—*cont.*						
Kistna, Western—*cont.*	(3) C ..	Masonry works on No. 3 branch of Santaravur side channel.	342	**342**	..	342	..	The earthwork not having been done, the masonry works cannot be started.
	(3) C ..	Masonry works on No. 4 branch of Santaravur side channel.	70	**70**	..	70	..	
		Bank Canal.						
	(2) O ..	Cattle-crossings	6,000	**4,000**	..	4,000	..	The estimates were only recently returned not approved by Engineer, Irrigation, and there is not now time to spend the full allotment.
	(3) L ..	Peturu channel extension	430	**• 430**	..	430	..	• The extension is not at present necessary.
		Répalle Main Drain.						
	(4) O ..	Fixing wooden gauge on Répalle drain ..	155	**100**	..	100	..	Work completed.
		Tungabhadra Drain.						
	(4) O ..	Fixing B.M. stones on Tungabhadra drain ..	500	**500**	..	500	..	Stones cannot be fixed till later on owing to the quantity of water lying about.
	B. Land ..	Total provision for compensation	(*a*) 8,401	**5,000**	..	..	..	Please see this office letter No. 2225 K.S., of 22nd January 1889.
		Total surrender ..	..	**15,642**	..	10,642	..	
Kistna, Eastern ..	..	Kistna Delta system	..	**9,562**	..	5,562	..	
Gudiváda ..	..		..	**11,264**	..	264	..	
Kistna, Western ..	..		..	**15,642**	..	10,642	..	
		Total, Kistna Delta system ..	..	**36,468**	..	16,468	..	
		Establishment	..	..	..	3,787	..	
		III. Tools and Plant.						
Kistna, Eastern ..	12. Miscellaneous.	Steam engine 12-horse power, with fittings, &c., complete.	..	..	2,700	..	2,700	Transferred from the Buckingham Canal division and advice received for adjustment in January 1889.

	Do. ..	Purchasing extra type required for Public Works Department press.	..	..	105	..	105	Reduced to make the total amounts to be surrendered to the Government of India a round sum.
	Do. ..	Making one rack and 12 cases, &c., for Public Works Department press.	..	..	66	..	63	
Kistna, Western ..	9. Navigation.	Ferry ballacuts	2,920	..	376	..	376	
		Total for Tools and Plant ..	..	..	3,247	..	3,244	
		Total for the Kistna Delta ..	..	..	..	17,011	..	
Pennér Anicut system.	12. Miscellaneous.	Tools and plant	500	**500**	..	500	..	
		Total for 49. Irrigation ..	..	..	..	17,511	..	

(*a*) These sums have been corrected in the office of the Chief Engineer for Irrigation.

BEZVADA,
30th January 1889.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

ORDER—dated 11th February 1889, No. 61 I., Public Works.

The amounts surrendered from the grants for compensation for land required for works on the Kistna Delta have already been withdrawn in G.O., No. 25 I., dated 25th January 1889. The other modifications of allotments proposed by the Superintending Engineer under 49. Irrigation are sanctioned. The net surrender of Rs. 17,511, including establishment charges, will be credited to the reserve.

2. The modifications of allotments proposed under Agricultural works have been disposed of separately.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 11th.

Recd. *Encl.*

G.O., 11th Feb. 1889, No. 61 I.

FEBRUARY.

Funds

Orders on letter from the Superintending Engineer, II Circle, proposing certain modification of allotments.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From R. B. BUCKLEY, Esq., Under-Secretary to the Government of India, Public Works Department (Civil Works—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Calcutta, 22nd January 1889, No. 10 I.

I am directed to acknowledge the receipt of your endorsement, No. 577 I., dated the 1st October 1888, requesting a renewal of the sanction accorded by the Secretary of State in 1882 to the estimates for the completion of the Kistna delta system, which, with the subsequent modifications sanctioned by the Government of India, stands as shown below:—

	RS.
Direct charges	139,19,784
Indirect do	9,81,160
Total ...	149,00,944

2. In reply, I am directed to state that, on a review of the outlay on the project, the Government of India is pleased to extend the Secretary of State's sanction, which expired in February 1887, for a further period of five years, commencing from the 1st April 1888.

3. I am to request that, in future, when submitting similar applications for renewal of sanction, a statement may be appended showing the principal items on which expenditure has to be incurred in completing the project.

ORDER—dated 11th February 1889, No. 62 I., Public Works.

Communicated to the officers concerned for information.

2. Para. 3 of the foregoing letter will be attended to by the Chief Engineer for Irrigation when submitting similar applications in future.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 11th.

Recd. *Encl.*

G.O., 11th Feb. 1889, No. 62 I.

FEBRUARY.

Kistna Delta System

Letter from the Government of India renewing, for a further period of five years, the sanction accorded by the Secretary of State to the estimates for the completion of the —, communicated to the officers concerned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

Telegram from the Superintending Engineer, II Circle, Bezváda, to the Chief Engineer for Irrigation, Madras, dated 4th February 1889.

Rs. 15,000 more, if available, can be spent, Buckingham Canal, Capital works, exclusive of establishment. Please wire sanction.

No. 10 I.

Submitted to Government.

2. The amounts in reserve under Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept aggregate Rs. 11,791 as shown below :—

	Original works.	Repairs.	Total.
	RS.	RS.	RS.
Ordinary works	2,800	1,334	4,134
Tank Restoration works	1,700	5,957	7,657
Total ...	4,500	7,291	11,791

The amount available, including establishment and tools and plant charges, is Rs. 14,680.

3. In the application for modification of allotments received with his letter No. 494 G.L., dated 30th January 1889, the Superintending Engineer, II Circle, has applied for the following modification of allotments under Agricultural works resulting in a net surrender of Rs. 1,440 :—

		Existing grant.	Decrease.	Increase.
		RS.	RS.	RS.
Kistna, Eastern ...	River embankments—			
	Kistna river flood-bank raising	2,000	1,000	...
	Minor Original works	...	..	560
	Repairs	6,631	1,000	...
Kistna, Western ...	Repairs	2,000	600	...
	River conservancy—			
	Protecting river margin at Volleru set ...	3,672	120	...
	Do. Penumudy set	6,892	1,095	...
	Repairs	2,500	...	1,815
	Total ...	...	3,815	2,375
	Deduct increase ...	...	2,375	...
	Net decrease ...	...	1,440	...

These modifications may be sanctioned and the net surrender of Rs. 1,792, including establishment and tools and plant charges as well as Rs. 14,680 available under Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept, making a total of Rs. 16,472, may be transferred to the Buckingham Canal for expenditure on Capital account and distributed as shown below :—

	RS.
Works	13,392
Establishment	3,080
Total ...	16,472

There are no funds available to meet the balance of the demand for the Buckingham Canal; should further surrenders be reported the balance required may be appropriated.

CHEPÂK,
7th February 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 11th February 1889, No. 63 I., Public Works.

The appropriations and transfers of funds, suggested by the Chief Engineer for Irrigation, are sanctioned.

2. The following deferred telegram will be sent to the Superintending Engineer, II Circle :—

"Your telegram, 4th instant. Additional allotment, Rs. 13,392, for Capital works, Buckingham canal, exclusive of establishment charges, sanctioned."

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS:

Dated February, 11th.

Recd. *Encl.*

G.O., 11th Feb. 1889, No. 63 I.

FEBRUARY.

Funds

Certain appropriations and transfers of —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation
Account.

Read—the following paper :—

Telegram from the Superintending Engineer, I Circle, Dowlaishweram, to the Chief Engineer for Irrigation, dated Madras, 7th February 1889.

Your telegram, 2nd instant. Unless Rs. 10,000 are sanctioned under Maintenance and Repairs, the repairs to the anicut and under-sluices will have to be stopped.

No. 11 I.

Submitted to Government.

2. Of the additional allotment of Rs. 16,000, which the Superintending Engineer, II Circle,* applied for on account of the Sangam Anicut system under Maintenance and Repairs, only Rs. 10,000, the amount surrendered from the Kistna delta in G.O., No. 25 I., dated 25th January 1889, have been allotted, as there were no funds available to meet the balance of the demand; but the full amount is required for urgent repairs.

* In his No. 762 N.L., dated 20th December 1888.

It is, therefore, recommended that the Government of India may be requested by wire to sanction an additional allotment of Rs. 20,000 in round sum for the following systems under 42. Major Works (Working Expenses).

	Maintenance and repairs.	Establishment.	Total.
	RS.	RS.	RS.
Godávari delta	10,260	2,360	12,620
Sangam Anicut system	6,000	1,380	7,380
Total ...	16,260	3,740	20,000

Chepâk,
9th February 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 11th February 1889, No. 65 I., Public Works.

Ordered that the following deferred telegram be sent to the Government of India :—

"To obviate stoppage of urgent repairs, please sanction additional allotment, Rs. 20,000, under 42. Major Works, viz., Rs. 12,620 for Godávari, 7,380 for Sangam."

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation
" Superintending Engineer, I Circle.
" " " II "
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 11th.

Recd. *Encl.*

G.O., 11th Feb. 1889, No. 65 I.

FEBRUARY.

Funds

Telegram to the Government of India applying for additional allotment of Rs. 20,000 under 42. Major Works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

Telegram from the Secretary to the Government of India, Public Works Department, to the Secretary to the Government of Madras, Public Works Department, dated 1st February 1889, No. A-20.

Do you require more money for Rushikulya? If so, how much?

Telegram from the Superintending Engineer, I Circle, dated 4th February 1889.

Telegram from the Secretary to the Government of India, Public Works Department, to the Secretary to the Government of Madras, Public Works Department, dated 7th February 1889, No. A-32.

12,000 available, Rushikulya. Wire if wanted.

ORDER—dated 12th February 1889, No. 68 I., Public Works.

Ordered that the following deferred telegrams will be sent:—

To the Government of India—

"Your telegram A-32, 7th instant. Additional allotment Rs. 12,000 for Rushikulya accepted."

To the Superintending Engineer, I Circle, Gopálpur—

"Additional allotment, 12,000, granted for Rushikulya. Every endeavour should be made to spend it. Please send distribution statement for grant now given."

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

Y.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 12th.

Recd. *Encl.*

G.O., 12th Feb. 1889, No. 68 I.

FEBRUARY.

Rushikulya Project

Telegrams to the Government of India accepting additional allotment of Rs. 12,000 for the — and to the Superintending Engineer, I Circle, intimating the grant and calling for a distribution statement.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From C. D. MACLEANE, Esq., Collector of Nellore, to the Secretary to Government, Public Works Department (Irrigation Branch), dated Nellore, 19th January 1889, No. 11—Comp.

I have the honor to forward, herewith, for publication in the *Fort St. George Gazette*, a draft declaration, together with a schedule under section 6 of Act X of 1870, for lands required for repairs to Rápúr large tank in the village of Rápúr.

2. I request that I may be authorized to take order for the acquisition of the land.

ORDER—dated 14th February 1889, No. 72 I., Public Works.

Ordered that the notification be published in the *Fort St. George Gazette*.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras:

PUBLIC WORKS.

Dated February, 14th.

Recd. *Encl.*

G.O., 14th Feb. 1889, No. 72 I.

FEBRUARY.

Lands

Notification of — required in the Nellore district for repairs to Rápúr large tank, ordered to be published in the *Fort St. George Gazette.*

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

From J. THOMSON, Esq., Acting Collector of Tinnevelly, to the Secretary to Government, Public Works Department, dated Tinnevelly, 25th January 1889, No. 42.

I have the honor to inform you that land to the extent of 14 acres and 32 cents. in the inam villages* of Sedukkuvaithan and Chokkapalangarai, Tenkarai taluk, is required for the cross bank and for raising the old right flood bank of the Támbraparni below Srívaikuntham anicut. As the owners do not seem willing to come to reasonable terms and as it is desirable, in order to ensure to Government an indefeasible title, to acquire the land under the provisions of the Land Acquisition Act X of 1870, I herewith forward a draft declaration under section 6 of the Act, and request that Government will be pleased to order the same to be published in the *Fort St. George Gazette*, and to authorize the Sub-Collector to perform, for its acquisition, the functions of the Collector under the Act.

	A.	C.
* Sedukkuvaithan	12	57
Chokkapalangarai	1	75
	14	32

ORDER—dated 14th February 1889, No. 73 I., Public Works.

Ordered that the notification be published in the *Fort St. George Gazette*.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Revenue Department.

IRRIGATION.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 14*th*.

Recd. *Encl.*

G.O., 14th Feb. 1889, No. 73 I.

FEBRUARY.

Land

Notification of — required in the Tinnevelly district for a cross bank and for raising the right flood bank of the Támbraparni river below Srívaikuntham anicut, ordered to be published in the *Fort St. George Gazette*.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From Lieutenant-Colonel R. R. E. DRAKE-BROCKMAN, R.E., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 4th February 1889, No. 1083 G.N.

In continuation of my endorsement, No. 1017 G.N., dated 22nd January 1889, on the copy of Rushikulya Division officer's letter No. 218 S.E., dated 1st January 1889, submitting an application for modification of allotments "Rushikulya Project," I have the honor to inform you that the Executive Engineer reports that, as the services of the Special Deputy Collector will be dispensed with by this department at the end of February, Rs. 37,500 only out of the allotment (Rs. 43,500) proposed for land compensation will be required for expenditure in the current official year. I have, therefore, the honor to request that you will be good enough to obtain the sanction of Government to the following transfer of funds:—

From		*To*	
Head works. Mahanadi section.	RS.	Mahanadi section.	RS.
B. Land	4,000	Russellkonda reservoir dam	4,000
2. Main canals and branches. Rushikulya canal.			
B. Land	2,000	Do. do.	2,000
	6,000		6,000

Order—dated 14th February 1889, No. 74 I., Public Works.

Of the sum of Rs. 6,000 surrendered from the grant for land compensation, only Rs. 4,878 will be available for expenditure on works exclusive of establishment charges. The following transfers of funds are sanctioned:—

Imperial, 35. Protective Works.
Irrigation.
Rushikulya Project.

From		*To*	
		I. Works.	
(1) Head works. Mahanadi section.	RS.	(1) Head works. Mahanadi section.	RS.
B. Land	4,000	Russellkonda reservoir dam	4,878
(2) Main canals and branches. Rushikulya canal.			
B. Land	2,000	II. Establishment	1,122
	6,000		6,000

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, I Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 14th.

Recd. *Encl.*

G.O., 14th Feb. 1889, No. 74 I.

FEBRUARY.

Funds

Certain transfers of — sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 9th February 1889, No. 891 N. L.

I have the honor to request you will be good enough to obtain the sanction of Government for the following transfer of funds in the Nellore division :—

Irrigation and Navigation Works.
43. Minor Works and Navigation.
Works for which neither Capital nor Revenue Accounts are kept.
Major Original Works.

From	RS.	*To*	RS.
Marripalli Madugu tank	1,500	Marripad tank, sanctioned in your Memorandum No. 3 N.L. of 14th January 1889	3,500
Guruvindapudi tank	2,000		
	3,500		3,500

The transfer is proposed, as there is already an expenditure of Rs. 3,040 on Marripad tank.

Irrigation.
42. Major Works (Working Expenses).
III.—Tools and Plant.

From	RS.	*To*	RS.
Pennér Anicut system	91	Sangam Anicut system	91

The transfer is proposed, as an estimate of Rs. 580 has been sanctioned for repairing trucks.

ORDER—dated 16th February 1889, No. 76 I., Public Works.

The following transfers of funds are sanctioned :—

42. Major Works (Working Expenses).
III.—Tools and Plant.

From	RS.	*To*	RS.
Pennér Anicut system	91	Sangam Anicut system	91

43. Minor Works and Navigation.
Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept.
Major Original Works.
Nellore Division.

From	RS.	*To*	RS.
Marripalli Madugu tank	1,500	Marripad tank	3,500
Guruvindapudi tank	2,000		
	3,500		3,500

2. Ordered that a copy of these Proceedings be forwarded to the Government of India, for information, with reference to the transfer of funds under 42. Major Works (Working Expenses).

(Here enter No. 77 I., dated 16th February 1889.)

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

ENDORSEMENT—dated 16th February 1889, No. 77 I., Public Works.

Forwarded.

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 16th.

Recd. *Encl.*

G.O., 16th Feb. 1889, Nos. 76 I., 77 I.

FEBRUARY.

Funds

Forwarding copy of Proceedings, sanctioning certain transfers of —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

Telegram from the Secretary to the Government of India, Public Works Department, to the Secretary to the Government of Madras, Public Works Department, dated Calcutta, 14th February 1889, No. A-38.

Your telegram, 11th. Additional grant, 20,000, under 42 sanctioned.

ORDER—dated 16th February 1889, No. 79 I., Public Works.

Ordered that the following deferred telegram be sent to the Executive Engineer, Godávari, Eastern, a copy thereof being sent by post to the Superintending Engineer, I Circle, for information :—

"Telegram, 7th instant, from Superintending Engineer, I Circle. Additional grant Rs. 10,260 sanctioned for Maintenance—Repairs, Godávari, Eastern, and Rs. 2,360 for Establishment."

2. The following deferred telegram will be sent to the Executive Engineer, Nellore Division, a copy thereof being sent by post to the Superintending Engineer, II Circle, for information :—

"Additional grant Rs. 6,000 sanctioned for Maintenance—Repairs, Sangam, and Rs. 1,380 for Establishment."

3. Ordered that a manuscript copy of these Proceedings be forwarded to the Examiner of Public Works Accounts, to enable him to regulate the issue of credits accordingly.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " " II "
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 16th.

Recd. *Encl.*

G.O., 16th Feb. 1889, No. 79 I.

FEBRUARY.

Funds

Sanctioning additional grants under Maintenance—Repairs and Establishment for the Godávari, Eastern, and Sangam divisions.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

Telegram from the Secretary to the Government of India, Public Works Department, to the Secretary to the Government of Madras, Public Works Department, dated 13th February 1889, No. A-37.

12,000 additional, sanctioned, Rushikulya. Another 12,000 available. Wire at once if wanted.

ORDER—dated 16th February 1889, No. 80 I., Public Works.

Ordered that the following deferred telegram be sent in reply to the Government of India :—

"Your telegram A-37, 13th instant. Additional grant Rs. 12,000 available is accepted for Rushikulya."

2. The following deferred telegram will be sent to the Executive Engineer, Rushikulya division, a copy thereof being sent by post to the Superintending Engineer, I Circle, for information.

"India has increased grant for Rushikulya by a second 12,000, making total gran Rs. 2,80,255, including credit for land assessment. Special measures must be taken to utiliz grant in full. Submit revised distribution statement."

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, I Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS:

Dated February, 16th.

Recd. *Encl.*

G.O., 16th Feb. 1889, No. 80 I.

FEBRUARY.

Rushikulya Project

Orders on telegram from the Government of India, allotting an additional grant of Rs. 12,000 for —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

From R. B. BUCKLEY, Esq., Under-Secretary to the Government of India, Public Works Department (Civil Works—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Calcutta, 1st February 1889, No. 20 I.

I am directed to forward, for the information of the Government of Madras, copies of a note by the Inspector-General of Irrigation on the Periyár Project, Madras.

ENCLOSURE.

Note by the Inspector-General of Irrigation on the Periyár Project, Madras.

TOUR IN MADRAS—VISIT TO PERIYAR PROJECT.

In accordance with instructions from the Honorable Member I proceeded from Bombay *viâ* Poona to Madras, which I reached on the morning of the 22nd of November. Colonel Mead and Mr. Walch had already made arrangements for my onward journey, and I left the same evening by the South Madras Railway for Erode, which was reached in early morning of the 23rd November, and thence by the South Indian (metre gauge) Railway to Ammayanáyakanúr.

The country beyond Erode was very interesting, as it was watered by the Kalingaroyen and other channels, the improvement and extension of which had lately been under consideration in connection with proposals submitted by the Madras Government. A young officer, who is employed on these works, but whose name I did not catch, happened to be travelling down in the same carriage, and was good enough to point out the different localities.

The Kalingaroyen canal runs along the outer edge of the Cauvery valley. The whole country appeared to be under water. The crop was, with few exceptions, rice in all stages of growth from seed-beds to nearly full-grown plants. The water flowed from one field to the next below it; and the ploughing and planting out was performed by men working half way to their knees in water.

It is proposed to carry the extension of the Kalingaroyen over the Nóyil river, which is crossed by the railway, close to its junction with the Cauvery. There are several dams on the Upper Nóyil and its waters are used for irrigation; where I crossed it the river was nearly dry, but I understand that higher up in its course it is a very considerable stream and is subject to heavy floods. After crossing the Nóyil there is irrigation in patches by cuts from the Cauvery. During the rest of the day nothing of much interest, from an irrigation point of view, was met with, but after passing Trichinopoly a good deal of the country was under irrigation from tanks, which, in the aggregate, must at this season of the year cover a considerable portion of its area.

On arrival at Ammayanáyakanúr, I was met by Mr. Somers-Eve, an Assistant Engineer engaged on the survey and alignment of the new channels from the Vaigai river in connection with the distribution of water from the Periyár project. From conversation with this gentleman, I learnt that parts of the main channels had been aligned and that the whole tract was being carefully surveyed and levelled; the main channels are being designed generally to run on contour lines on the outer edges of the commanded area and the minor channels will run from them towards the river. Colonel Pennycuick subsequently told me that the greater part of the existing tanks will become useless when the Periyár scheme is in operation and that the sale of the land in the present tank beds would go a long way towards recouping the capital outlay on the project; this information he had lately obtained from the Revenue officers who are engaged on measuring up and assessing the land.

On the 24th November, I left Ammayanáyakanúr in a bullock bandy travelling on the district road that runs up the valley of the Vaigai; Periyakulam, where I stopped for dinner, is a considerable place. The road is not very broad and is not very well kept. None of the large streams are bridged and I was led to expect that I might be stopped at any of them that might happen to be in flood. I was lucky enough to escape that misery both in going and in coming back. A considerable length of the road is bordered by rows of old trees. This road is continued across the hills into Travancore territory.

After a very uncomfortable night's journey I arrived at 9 A.M. on the 25th at Karamvanuth, where a bridge is under construction, and from thence I rode up to Thekady, called in the reports "first camp." The hill road, which is known as the Gúdalúr ghât, began at about the 3rd mile; it is a carefully laid-out road, about 14 feet wide with a ruling gradient of 1 in 15 and is in fairly good order A branch road has been made to the camp, which is on the far side of the watershed and close to the upper end of the tunnel through which the Periyár waters will flow into the Vaigai.

The "camp" at present consists of a few thatched bamboo huts where the officers and subordinates lived in 1887; a house is under construction for the officer who will supervise the tunnel works.

Colonel Pennycuick met me at Thekady, and after breakfast I saw the mouth of the tunnel on which regular work was not commenced, as some of the plant had not yet arrived. The channel which leads to it and which will be 24 feet wide at bottom was in course of excavation for a considerable part of its length. The rock at this place, and apparently all through these hills, is a hard sienite and is generally overlaid by 10 feet of stiff yellow clay. The vegetation in the interior of the hills is tropical, trees and creepers are only found in the bottom and on the sides of the ravines, and the tops of the hills are covered with luxuriant grass and a fern very like the "bracken." Elephants, tigers, bison and sambur roam about the hills; the deer have retired a good deal since the works began and the tigers have followed them, so that they have both become scarce, but I heard elephants trumpetting both nights that I was in the hills, and one of the officers saw a herd of bison.

In the afternoon I rode on to the station at the site of the dam on the Periyár river. The road is only a bridle path and follows the course of the ravine, along which water will eventually flow backwards to the tunnel. There are numerous swamps in the bottom of the ravine; several of the locks on the temporary navigation channel were in hand, and, as the completion of the arrangements for water carriage is considered to be of great importance, the works are being pushed on. I reached Periyár just as the sun was sinking behind the hills a cold wind was blowing up the valley of the river.

I went over the works on the morning of the 26th. Colonel Pennycuick's house is situated on the slope of the hill in a line with the dam and only a few feet higher than its crest. From this point a very good idea is obtained of the magnitude of the undertaking. The valley narrows at the dam site, so that the length of the crest at 155 feet above the river-bed is only 1,200 feet, the river itself is barely 200 feet wide, and its longitudinal slope is little more than 5 feet, in a mile for several miles above the site, which may be considered in every respect most favorable for the construction of a dam. The level of the crest of the weir will be 2,992 feet above sea-level. The hills bordering the valley are perhaps 5,000 or 6,000 feet high.

I first visited the right bank escape, which is made by cutting down a depression in the crest of the ridge, at a short distance from the right flank of the dam. A considerable part of the overlying clay had been removed and a large gang of men (there were about 1,200 altogether on the works) were busy, quarrying the stone, which will be delivered by a tramway to the head of an incline, down which the cars will be lowered by a wheel to the stone-breakers, where it will be converted into ballast and used in the construction of the concrete dam. Lime-kilns were under construction on a piece of level ground to the right of the tramway. A temporary dam for the diversion of the river during the laying of the foundation of the weir was partly finished and a diversion channel on the right bank was being dug. The foundations of the workshop and turbine well, which are situated between the diversion channel and the river, were being blasted out of the live rock The turbine will drive the stone-breakers, concrete-mixers, and all other labor-saving machines, which will be largely used on the works. The hill side on the left flank of the site of the dam had been roughly cleared of overlying clay and good solid rock had been found everywhere. The village for work-people and houses for the staff were practically complete and this was all there was to be seen at Periyár. Plans I, II and III of the headworks, which are in the Periyár Section Volume, will illustrate the above remarks better than any sketches that I can make. Pages 39, 40 and 41 of the Madras Irrigation Administration Report give the state of the works at the close of the year 1887-88 in considerable detail.

The working season, which began on the 25th June, had up to the date of my visit been very unfavorable; the two monsoons had practically run one into the other and there had not been more than ten fine days in any single month; the coolies do not turn out at all on rainy mornings and progress up to date had not been equal to expectation. December, January and February are the best working months and the officers, though annoyed, were by no means

depressed by their bad luck and still hoped to get through a good stroke of work before the end of the season.

The officers on the spot were Mr. Taylor, Executive Engineer in charge, Mr. Wickham, Assistant Engineer for the dam, and Mr. Mackenzie, Assistant Engineer in charge of the remaining works towards the plains.

There had been some delay in supplying the wire tramway, by means of which the limestone for the works is to be got up from the plains; it was, however, daily expected; in the meantime, lime is brought up on carts and donkeys. When the locks on the outlet channel are finished and the wire tramway at work, the works will be independent of all other carriage in the hills.

It was known to Government before I visited the Periyár that no great progress in construction could have been made, and I conceive that the object of my inspection was to enable me to give an independent opinion on the project and on the way in which it was being carried out. The conception is a grand one: what struck me most was its extreme simplicity. The locality seemed as if it had been made for the project and the designers have carefully made use of every favoring circumstance. Details have all been carefully worked out and difficulties foreseen and as far as possible guarded against. I think the execution of the works may be safely left in the hands of the local officers.

I left Periyár on the 27th November in rain and wind and reached Ammayanáyakanúr on the evening of the 28th. I started the same night by train for Madras, travelling on the South India and coast line of Railway, which took me through country irrigated by the Cauvery and Coleroon, past St. Thomas' Mount and the granite hill, from which the stone for the harbour works is quarried, into Madras which was reached on the evening of the 29th November.

(Signed) R. HOME, Colonel, R.E.,
Inspector-General of Irrigation.

18th January 1889.

Order—dated 20th February 1889, No. 82 I., Public Works.

Communicated to officers concerned.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, Periyár Project.
„ Examiner, Public Works Accounts.
„ Revenue Department.
„ Superintending Engineers, IV and VI Circles.

IRRIGATION.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 20th.

Recd. *Encl.*

G O., 20th Feb. 1889, No. 82 I.

FEBRUARY.

Periyar Project, Madras

Note by the Inspector-General of Irrigation on the —, communicated to officers concerned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following paper:—

Notes of Inspection by the Acting Chief Engineer for Irrigation, 21st to 28th January 1889.

CAUVERY DELTA WORKS.

Upper Anicut.—There are no alarming holes below the work, but the rough stone apron has during the freshes of the past season been somewhat disturbed; where considerable strips along the edge have to be repacked, it will be well to keep them down about 1½ foot lower than before.

The leak noticed by Colonel Mead, in para. 2 of his inspection notes with Proceedings of Madras Government, No. 264 I., dated 3rd May 1888, under the north branch of the anicut, below 9th arch of the bridge, appears to me serious and it will be advisable during this dry season to clear out to 9 feet below crest-level in front of the work for some 15 feet on either side of the apparent position of the leak and for the same distance back (up-stream) from the face of the work and then put in well-worked puddle one yard thick, replacing on top of it the stone which will have to be removed when excavating the pit. The patch to be cleared out will first have to be enclosed by sheet piling, for which, as the depth to be driven is very small, split palmyras will do. The greatest care must be taken to do the work quickly and not to have the hole open when any fresh comes down the river.

2. Cauvery Dam.—As usual covered with sand, not it is said of unusual depth. The quantity of water entering the delta is calculated and tabulated from the observations of depths on the gauge at this work, but now more accurate results can be arrived at from observations at the Cauvery and Vennár regulators and works connected with them, and this the Superintending Engineer should arrange for being done.

3. The very useful abstract of registers of heights of water at these upper anicut works prepared and printed when Colonel Mead was Superintending Engineer of the VI Circle appears to have been lost sight of; there should be a copy at the head works as well as in the Superintending Engineer's and Executive Engineer's (Tanjore) offices and it should be kept entered up in each successive month and year.

4. Old Cauvery and Vennar Dams.—The Cauvery dam has been thoroughly removed to bed level, but the piers of the scouring sluice vents have not been so yet.

Of the Vennár dam, which had been raised to 6½ feet and which it was intended to retain (see paras. 8 to 10 of note by Chief Engineer for Irrigation with Proceedings of Madras Government, No. 74 I., dated 31st January 1888), a considerable portion was destroyed by a fresh in June last and with it went 5 arches of the bridge over the work; this of course renders the remaining portion of the bridge over the work useless and makes the bridge over the Cauvery of little value. The fallen portion of the dam has been replaced by a stone dam, the crest of which is 2 feet lower than that of the

remainder of the work; but it is very certain that this cannot be made secure against the very considerable discharge * over it to which it is liable without a large expenditure; nor is it this stone dam only which is likely to go without extensive protection, for the aprons of the whole work are not sufficient for its present conditions.

* The flood of 1888 went up to 10 feet above its crest.

It is, however, not considered advisable to incur such expenditure, for it is hoped that, in a few years, the Cauvery between the old work and the "grand anicut" will be able to carry the whole water of the river and then the old Vennár head will be entirely closed; in the meantime, if portions of the old Vennár dam fall down, they must just be made up in the inexpensive way done this year and the plantation of lunka grass both above and below the work must be maintained and silting caused as much as possible. The widening of the Cauvery between the old and new works must also be encouraged, especially at the narrow place, for dealing with the projecting "padugay" on the right side of which an estimate is, it is said, nearly ready.

5. The *raising of the bank between the Cauvery and Vennár* from the old to new head of the latter, which is in progress on the estimate sanctioned in G.O., No. 896 I., dated 16th December 1886, is well advanced but portions in and near the village of Tohur are not commenced on account of difficulty about land; the difficulty must be promptly dealt with, Act X of 1870 being put in force if necessary.

6. Cauvery and Vennar Regulators.—These works are in excellent order and require nothing done in connection with them that cannot be carried out at a small expenditure from the ordinary maintenance and repair grant.

There are many slight cracks in parapets and sluice arches; none of them give any cause for anxiety.

The man-holes in the shutter platforms are, if left open as now, sure to lead to accidents and they should be covered by movable iron gratings.

The telephonic arrangement between these works and Trichinopoly was brought into operation in July last and is working satisfactorily.

7. Grand Anicut.—This work is in good order, except that the concrete surface of the sloping aprons is for half its length somewhat broken up; this will now be treated in the same way as the other half was in last season with Portland cement concrete.

The iron falling shutters on the crest of this work act well but not so the two long wooden shutters; they should each be divided into three.

There are two interesting old inscription stones on this work, one stating how this "calingulah" was repaired and had upright stones put on it in *1804*, the other stating that the "under sluices" were added in 1830. On the side of the latter stone the following words should be cut, viz:—"Falling shutters were fitted on the crest of this work, shutters with screw gearing were fitted to the under sluices, and the bridge was raised in 1886-87."

8. *The ends of the "Togur" and "Pillay" channels* were cut through by the new Vennár head below the regulator. To carry the supply required for the former from its old source, viz., the head sluice at nose between old regulators, an inverted syphon or "under-tunnel" was built under the new Vennár head and at the same time a second vent was provided to that work to pass to the Cauvery the drainage of the piece of land lying between the Cauvery and the course of the Vennár from its old to its new head. For the "Pillay" channel, a head sluice was built in the new Vennár head at its lower end and the villagers interested complain bitterly that their supply is not only not so good as it was but is insufficient to supply their lands; their complaint is, I consider, a just one and means are to be taken to supplement their deficient supply. After discussion on the ground with the Superintending Engineer and Executive Engineer, it was decided to do this by giving water from the "Togur" channel where it approaches the "Pillay" channel head through a small sluice, as the Executive Engineer is sure from observation that more water than the "Togur" channel lands require is or can be passed through the under-tunnel. Should silting or any other reason prevent the supply required passing through the one irrigation vent of the work, then I consider that without any real damage to the small area of

cultivated land which the drainage vent now serves, its drainage may be sent into the Vennár through a small culvert with a flap shutter, and that vent of the under-tunnel also be used for passing water for irrigation.

9. Cauvery-Kudamurti Dams.—In good order. The Kudamurti takes off far more than its proper share in low and moderate freshes and one of the first things necessary to secure any very valuable result from the construction of the Cauvery and Vennár regulators is to prevent the Kudamurti from robbing the Cauvery of the improved supply which the regulators have secured to it in low and moderate freshes. In June, July, August and September of the past season the Cauvery below the Kudamurti got a full supply for only 13 days, whilst the latter river had it for 113 days; this preposterous state of affairs can be improved at a moderate cost by providing at the Kudamurti dam screw gearing shutters, by which regulation in low freshes can be secured; such shutters need only be of small height and possibly will not be required on the higher portions of the dam, but what is actually required cannot be laid down till receipt of certain tables of heights of water and discharges which the Executive Engineer, Tanjore, was requested to prepare; on receipt of them detailed instructions will be sent to the Superintending Engineer.

10. Vennar-Vettar Regulators.—These works are in good order, but the second apron of the Vettar work, which is apparently of brick laid flat and has had its surface broken up in places, had better have the two top courses of brick removed and replaced by concrete. There is no date tablet to these works, one should be fixed.

11. Vennar-Vadavar Head Sluice.—This work built some three years ago just south of the Vennár regulator to take the place of the old head some four miles further up the river is a neat work. A tablet showing the year of construction should be fixed on it.

12. Jumbuga-Cauvery Head Sluice.—Now fitted with shutters with screw gearing in good order.

Palamcottah,
5th February 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

No. 12 I.

Submitted for the information of Government.

Palamcottah,
5th February 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 21st February 1889, No. 84 I., Public Works.

Communicated to the Superintending Engineer, VI Circle, for information and guidance.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 21st.

Recd. *Encl.*

G.O., 21st Feb. 1889, No. 84 I.

FEBRUARY.

Cauvery Delta Works

Notes of inspection by the Acting Chief Engineer for Irrigation of the —, communicated to the Superintending Engineer, VI Circle.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

SECOND CIRCLE.

Buckingham Canal.

Application for additions and modifications of allotments for irrigation works for 1888-89.

Division.	Main and sub heads.	Names of works.	Existing grant.	Modification of allotments applied for		Modification of allotments proposed.	
				Reduction.	Increase.	Reduction.	Increase.
1	2	3	4	5	6	7	8
		43. MINOR WORKS AND NAVIGATION.	RS.	RS.	RS.	RS.	RS.
		Irrigation and Navigation Works for which Capital and Revenue Accounts are kept.					
	Main canals and branches—	*Capital.*					
Buckingham Canal.	I. Navigation works.	Constructing flood-gate, south side of Chintamony back-water	13,300	3,000	..	3,000	..
	L. Earthwork.	Diversion of canal from Coromandel to Tettupet	6,000	1,800	..	1,800	..
	I. Navigation works.	Constructing flood-gate north bank of Swarnamukhi river	15,000	..	1,000	..	1,000
	L. Earthwork.	Diversion of canal from 123/VI to 126/VII miles	9,000	2,000	..	2,000	..
	Do. ..	Improvements of canal from 162/VI to 168/II miles	7,000	1,000	..	1,000	..
	I. Navigation works.	Constructing flood-gate north bank of Pennér	20,000	..	3,500	..	3,500
	L. Earthwork.	Diversion of canal from 74/2½ to 78 miles at Swarnamukhi	6,500	..	1,800	..	1,800
	Do. ..	Manneru northern diversion, 160 to 162/VI miles	8,500	..	1,000	..	1,000
	K. Buildings.	Constructing rest-house at Mahabalipuram	5,700	..	500	..	500
		Total ..	..	7,800	7,800	7,800	7,800

Madras,
31st January 1889.

(Signed) C. VINCENT,
Ex. Engr., Buckingham Canal Division.

(Signed) J. HANNAN,
Supg. Engineer, II Circle.

Order—dated 21st February 1889, No. 85 I., Public Works.

The modifications of allotments applied for are sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 21st.

Recd. *Encl.*

G.O., 21st Feb. 1889, No. 85 I.

FEBRUARY.

Funds

Certain modification of allotments in the II Circle, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From Major D. McN. CAMPBELL, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 9th February 1889, No. 2403 T.J.

I have the honor to request sanction to the following modification of allotments under 43. Minor Works and Navigation—Agricultural works—Works for which neither Capital nor Revenue Accounts are kept, in the Tanjore division :—

—	Existing grant.	Modification of allotment applied for		Modification of allotment proposed.	
		Reduction.	Increase.	Reduction.	Increase.
	RS.	RS.	RS.	RS.	RS.
(1) Coleroon, R.B., from road No. 4 to Lower Coleroon anicut, item No. 63, in budget of 1888-89 and G.O., No. 753 I., dated 20th December 1888	30,000	..	3,000	..	3,000
(2) Cauvery, R.B., from Vennár head and left bank from Grand Anicut to Triviar bridge, item No. 64 in budget of 1888-89 and G.O., No. 753 I., dated 20th December 1888 ..	10,000	3,000	..	3,000	..

2. Owing to the failure of the contractor, the existing grant for item No. 2 cannot be fully utilized. The progress of item No. 1 is satisfactory; from the existing grant of Rs. 30,000 for this item only a balance of Rs. 557-9-10 remained at the end of January. It is, therefore, now proposed to transfer Rs. 3,000 to this work from item No. 2.

Order—dated 21st February 1889, No. 86 I., Public Works.

The transfer of funds proposed by the Superintending Engineer is sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 21st.

Recd. *Encl.*

G.O., 21st Feb. 1889, No. 86 I.

FEBRUARY.

Funds

Certain transfer of — sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From Lieutenant-Colonel R. R. E. DRAKE-BROCKMAN, R.E., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 7th February 1889, No. 2978 G.D.

I have the honor to submit, herewith, a survey report, dated the 30th January 1889, received from the Executive Engineer, Godávari Eastern Division, recommending the sale of the iron flat No. 80 of the floating plant of his division. It will be observed from the report that, in the Division officer's opinion, the flat is not worth repairing and I therefore recommend that she be sold by public auction and request that the sanction of Government may be obtained accordingly.

Order—dated 21st February 1889, No. 87 I., Public Works.

The Superintending Engineer, I Circle, is authorized to sell by public auction iron flat No. 80.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 21st.

Recd. *Encl.*

G.O., 21st Feb. 1889, No. 87 I.

FEBRUARY.

Iron Flat No. 80

Superintending Engineer, I Circle, authorized to sell by public auction — belonging to the Godávari Eastern Division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

Proceedings of the Board of Revenue (Land Revenue), dated 1st February 1889, Mis. No. 562.

THE HON. J. GROSE, M.A.

From the Collector of Godávari, dated 20th December 1888, No. 526.

0·7 cents of inam in Palivela, Amalápuram taluk, required for the Gorinkola earthwork improvements.

I have the honor to forward, for approval and for publication in the *Fort St. George Gazette*, a draft notification under the Land Acquisition Act for the land noted in the margin, the whereabouts of the owner being unknown.

Resolution—dated 1st February 1889, Mis. No. 562.

Submitted to Government for approval and publication.

(A true Copy and Extract.)

(Signed) M. HAMMICK,
Secretary.

No. 830, Revenue.

Transferred to the Public Works Department (Irrigation Branch).

FORT ST. GEORGE,
8th February 1889.

(Signed) C. A. GALTON,
Secretary to Government.

ORDER—dated 22nd February 1889, No. 88 I., Public Works.

Ordered that the notification be published in the *Fort St. George Gazette*.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Revenue Department.

IRRIGATION.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 22nd.

Recd. *Encl.*

G.O., 22nd Feb. 1889, No. 88 I.

FEBRUARY.

Land

Notification for the acquisition of certain — required for the Gorinkola drain earthwork improvements in the Godávari district, ordered to be published in the *Fort St. George Gazette.*

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

Proceedings of the Board of Revenue (Land Revenue), dated 31st January 1889, Mis. No. 524.

THE HON. J. GROSE, M.A.

From J. LEE-WARNER, Esq., Collector of the Chingleput district, to the Secretary to the Commissioners of Land Revenue, dated Saidápet, 21st December 1888, No. 3607-Eng.

I have the honor to submit, under Act X of 1870, a draft notification for the acquisition of 33 cents of land required for the extension of Sothuperumbedu channel in the said village, Ponnéri taluk, and to request that the sanction of Government may be obtained for the same.

2. The Deputy Collector, Saidápet division, who was asked to acquire the land by private negotiation, fully explains in his report the circumstances under which the necessity has arisen for acquiring the same under the Act.

3. A copy of the report is herewith submitted.

Resolution—dated 31st January 1889, Mis. No. 524.

Submitted to Government for approval and publication.

(A true Copy and Extract.)

(Signed) M. HAMMICK,
Secretary.

No. 822, Revenue.

Transferred to the Public Works Department.

FORT ST. GEORGE,
8th February 1889.

(Signed) C. A. GALTON,
Secretary to Government.

ORDER—dated 22nd February 1889, No. 89 I., Public Works.

Ordered that the notification be published in the *Fort St. George Gazette.*

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, V Circle.
" Revenue Department.

IRRIGATION.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 22nd.

Recd. *Encl.*

G.O., 22nd Feb. 1889, No. 89 I.

FEBRUARY.

Land

Notification for acquisition, of certain — required for the extension of the Sothuperumbedu channel in the Chingleput district, ordered to be published in the *Fort St. George Gazette.*

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

Proceedings of the Board of Revenue (Land Revenue), dated 4th February 1889, Mis. No. 630.

THE HON. J. GROSE, M.A.

From E. GIBSON, Esq., Collector of Tanjore, to the Secretary to Government, Public Works Department (through the Secretary to the Commissioners of Land Revenue), dated Vallam, 18th January 1889, No. 34.

I have the honor to inform you that a piece of land, measuring cents 6 $\frac{9}{121}$ in Umayalpuram, Tattimal padugai village, Kumbakónam taluk, is required for straightening the Arasillár banks, and as it is desirable, in order to ensure to Government an indefeasible title to it, to acquire the land under the provisions of the Land Acquisition Act X of 1870, I herewith forward a draft declaration under section 6 of the Act that it is needed for a public purpose and request that you will be good enough to order the same to be published in the *Fort St. George Gazette.*

2. I further request the orders of Government for its acquisition.

Resolution—dated 4th February 1889, Mis. No. 630.

Submitted to Government for approval and publication.

(A true Copy and Extract.)

(Signed) M. HAMMICK,
Secretary.

No. 832, Revenue.

Transferred to the Public Works Department.

FORT ST. GEORGE,
8th February 1889.

(Signed) C. A. GALTON,
Secretary to Government.

ORDER—dated 22nd February 1889, No. 90 I., Public Works.

Ordered that the notification be published in the *Fort St. George Gazette.*

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.

IRRIGATION.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 22nd.

Recd. *Encl.*

G.O., 22nd Feb. 1889, No. 90 I.

FEBRUARY.

Land

Notification for acquisition of certain — required for straightening the Arasillár banks in the Tanjore district, ordered to be published in the *Fort St. George Gazette.*

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

Telegram from the Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated 21st February 1889.

Please transfer Rs. 1,000 excluding establishment charges from maintenance grant, Gudiváda, to Pennér anicut maintenance. Wire sanction to Executive Engineer.

Order—dated 22nd February 1889, No. 93 I., Public Works.

The following transfer of funds is sanctioned :—

42. Major Works (Working Expenses).
Maintenance and Repairs.

From Kistna Delta System. Gudiváda Division.	RS.	*To* Pennér Anicut System. Nellore Division.	RS.
Works	1,000	Works	1,000
Establishment	230	Establishment	230
Total ...	1,230	Total	1,230

2. The following deferred telegram will be sent to the Executive Engineer, Nellore, and a copy thereof by post to Superintending Engineer, II Circle, for information :—

"Superintending Engineer's telegram, 21st instant. Grant under 42. Maintenance and Repairs, Pennér Anicut System, is increased by Rs. 1,000 excluding establishment."

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 22nd.

Recd. *Encl.*

G.O., 22nd Feb. 1889, No. 93 I.

FEBRUARY.

Funds

Certain transfer of —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Account.

READ—the following paper:—

From Lieut.-Colonel R. R. E. DRAKE-BROCKMAN, R.E., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 11th February 1889, No. 2998 G.D.

I have the honor to request the sanction of Government to the following transfer of funds:—

Godávari Eastern Division.

From	RS.	*To*	RS.
Extensions and improvements ...	2,000	Maintenance and repairs	2,000

ORDER—dated 25th February 1889, No. 96 I., Public Works.

The following transfer of funds is sanctioned:—

42. Major Works (Working Expenses).
Godávari Delta System.
Eastern Division.

From	RS.	*To*	RS.
Extensions and Improvements ...	2,000	Maintenance and repairs	2,000

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

GENERAL.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 25th.

Recd. *Encl.*

G.O., 25th Feb. 1889, No. 96 I.

FEBRUARY.

Funds

Certain transfer of —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From Superintending Engineer, II Circle, dated 31st October 1888, No. 1695 K.S.
To „ „ „ 16th November 1888, No. II/115 K.S.

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 27th January 1889, No. 2282 K.S.

With reference to your memorandum No. II/115 K.S., dated 16th November 1888, I have the honor to re-transmit the floating plant statement of the Kistna delta for 1889-90, duly recast in the forms in use in the Godávari district so far as the information is available.

2. The column "tonnage" of steamer, dredges and staff boats has not been filled up as they are not measured in this district. I have now given orders to the Executive Engineer, Eastern Division, Kistna, to have them measured as early as possible and their tonnage obtained for insertion in the next statement.

Enclosures.

Statement of the irrigation floating plant in the Kistna district showing the estimated cost of upkeep during the year 1889-90.

Part I—Steamers and Steam-dredges.

Registered number.	Details of plant. Description.	Details of plant. Name of steamer, &c.	Details of plant. Date of construction.	Measurement of plant. Hull over all. Length.	Measurement of plant. Hull over all. Breadth.	Measurement of plant. Hull over all. Depth.	Measurement of plant. Extra width for paddle box.	Measurement of plant. Draft when loaded.	Measurement of plant. Tonnage according to navigation rules.	Machinery, &c. Engines. Nominal horse-power.	Machinery, &c. Engines. Description.	Machinery, &c. Boilers. Lb. pressure.	Machinery, &c. Boilers. Description.	Machinery, &c. Propellers. Description.	Machinery, &c. Propellers. Revolutions per minute.	Average speed (miles per hour).	Value of plant. Original.	Value of plant. Present book-value.	Probable cost of upkeep in 1889-90.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
				FT. IN.	FT. IN.	FT. IN.		FT. IN.								MILES.	RS.	RS.	RS.	
1	Steamer.	Alexandra.	Received from Calcutta in 1885-86.	61 0	9 2	5 9	..	3 9	..	10	High pressure double engines.	80	Marine tabular.	Twin screw.	..	8	13,131	10,505	* 1,020	In good order.
																	13,131	10,505	1,020	
1	Dredge ..	..	1858-59 ..	50 0	8 0	3 10	..	2 4	..	6	High pressure horizontal.	50	Tabular horizontal.	..	..	..	15,614	..	325	Requires special repairs. Book-value has been wiped out (see foot-note).
2	Do. ..	..	Do. ..	50 0	10 0	3 10	..	2 0	..	6	Do. ..	50	Do. ..	..	..	..	15,614	..	325	In good order. Do.
3	Do. ..	..	1859-60 ..	90 0	14 6	3 10	..	1 9	..	8	High pressure oscillating.	50	Do. ..	..	..	..	28,357	..	460	Do.
5	Do. ..	..	1866-67 transferred from Godávari.	90 0	14 6	3 10	..	1 11	..	8	Do. ..	50	Do. ..	..	..	..	30,439	..	460	Do.
9	Do. ..	..	1872-73 transferred from Godávari.	90 0	14 6	3 10	..	1 9	..	8	Do. ..	50	Do. ..	..	..	..	23,000	..	460	Wants new boiler. Do.
	Hand dredger.	..	1885-86 ..	48 3	7 1	1 6½	..	0 9½	..	..	..	..	..	..	..	..	821	452	134	In good order, made into mud punt.
	Do. ..	..	Do. ..	48 3	7 1	1 6½	..	0 9½	..	..	..	..	..	..	..	..	822	452	134	Do.
											Total ..	..	..	..	..	..	1,14,667	904	2,298	
											Grand Total ..	..	..	..	..	..	..	..	3,318	

		RS.
* Maintenance, annual	.. ..	620
Expenses for use by departmental officers	.. ..	400
		1,020

Rule for finding present book-value.

(1) Steamers to be reduced 10 per cent. every year and the amount of special repairs, if any, must be added thereto.
(2) Steam-dredges to be reduced 15 per cent. every year and the amount of special repairs, if any, must be added thereto.
(3) Priestman's dredger is omitted from this return (*vide* G.O., No. 722 I., dated 9th November 1887).

20th January 1889.

(Signed) A. M. HAYES,
Executive Engineer, Eastern Kistna Division.

Statement of the irrigation floating plant in the Kistna district showing the estimated cost of upkeep during the year 1889-90.

Part II—Boats and Punts.

Re-gistered number.	Details of plant.		Measurement of plant.										Value of plant.		Probable cost of up-keep in 1889-90.	Remarks.
	Description of boats.	Date of con-struction.	Hull over all.						Draft, when loaded.		Tonnage according to navigation rules, measure-ments.		Original.	Present book-value.		
			Length.		Breadth.		Depth.									
1	2	3	4		5		6		7		8		9	10	11	12
			FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	Gross.	net.	RS.	RS.	RS.	
1	Iron punt	1859-60 ..	60	0	10	0	2	10	2	6	26	22	2,186	..	150	Fair order. Book-value has been wiped out (see foot-note).
6	Do.	Do. ..	60	0	10	0	2	10	2	6	26	22	2,185	..	150	Do. do.
8	Do.	1861-62 ..	60	0	10	0	2	10	2	6	26	22	2,172	698	150	Fair order.
9	Do.	Do. ..	60	0	10	0	2	10	2	6	26	22	2,172	..	150	Fair order. Book-value has been wiped out (see foot-note).
11	Do.	Do. ..	60	0	10	0	2	10	2	6	26	22	2,172	98	150	Fair order.
12	Do.	1867-68 ..	60	0	10	0	2	10	2	6	26	22	3,951	..	150	Fair order. Book-value has been wiped out (see foot-note).
16	Do.	1861-62 ..	60	0	10	0	2	10	2	6	26	22	2,172	..	150	Good. Book-value has been wiped out (see foot-note).
17	Do.	1862-63 ..	44	0	12	0	3	9	2	6	25	21	4,091	..	150	Do. do.
18	Do.	1864-65 ..	44	0	12	0	3	9	2	6	25	21	2,299	43		
	Special repairs	....	..		..		..		..		..		..	521		
19	Iron punt	1864-65 ..	44	0	12	0	3	9	2	6	25	21	2,299	—147	150	Good order.
	Special repairs	....	..		..		..		..		..		..	1,059		
20	Iron punt	1871-72 ..	62	0	10	0	2	10	2	0	30	26	5,916	..	150	Fair order. Book-value has been wiped out (see foot-note).
21	Do.	1870-71 ..	40	6	7	6	2	2	1	11	11	10	1,584	251	120	Fair order.
22	Do.	1871-72 ..	40	6	7	6	2	2	1	11	11	10	1,524	288	120	Do.
23	Do.	1872-73 ..	40	6	7	6	2	2	1	11	11	10	1,524	406	120	Do.
24	Do.	1873-74 ..	40	6	7	6	2	2	1	11	11	10	2,181	..	120	Fair order. Book-value has been wiped out (see foot-note).
26	Do.	1874-75 ..	40	6	7	6	2	2	1	11	11	10	1,960	324	120	Fair order.
27	Do.	Do. ..	40	6	7	6	2	2	1	11	11	10	1,960	744	120	Do.
28	Do.	1875-76 ..	40	6	7	6	2	2	1	11	11	10	1,960	744	120	Do.
29	Do.	1872-73 ..	39	9	11	0	2	10	1	7	21	18	400	513	120	Do.
30	Do.	1872-73, received from Godávari.	39	9	11	3	2	10	1	7	21	18	400	633	120	Do.
31	Do.	Do. do. ..	35	0	8	3	2	11	1	11	13	11	250	640	120	Do.
32	Do.	Do. do. ..	39	6	12	0	3	0	1	6	24	21	1,400	..	120	Fair order. Book-value has been wiped out (see foot-note).
50	Do.	1883-84 ..	72	0	12	0	4	0	3	3	56	48	4,063	2,033	150	In good order.
51	Do.	Do. ..	72	0	12	0	4	0	3	3	56	48	4,171	2,086	150	Do.
52	Do.	1884-85 ..	72	0	12	0	4	0	3	3	56	48	4,242	2,546	150	Do.
											Total ..		59,234	13,480	3,420	

Part II—Boats and Punts—cont.

Re-gistered number.	DETAILS OF PLANT. Description of boats.	DETAILS OF PLANT. Date of construction.	MEASUREMENT OF PLANT. Hull over all. Length.	MEASUREMENT OF PLANT. Hull over all. Breadth.	MEASUREMENT OF PLANT. Hull over all. Depth.	MEASUREMENT OF PLANT. Draft when loaded.	MEASUREMENT OF PLANT. Tonnage according to navigation rules, measurements.	VALUE OF PLANT. Original.	VALUE OF PLANT. Present book-value.	Probable cost of upkeep in 1889-90.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			FT. IN.	FT. IN.	FT. IN.	FT. IN.	Gross net.	RS.	RS.	RS.	
33	Wooden punt with iron ribs composite.	1876-77 ..	60 0	13 0	3 6	2 6	34 29	2,500	1,241	160	Good order.
	Special repairs	....	..	..	..	..	..	..	414		
34	Wooden punt with iron ribs composite.	1876-77 ..	60 0	13 0	3 6	2 6	34 29	2,500	1,178	160	Do.
35	Do. do. ..	Do. ..	72 0	13 0	3 6	2 6	40 34	3,000	1,296	190	Do.
	Special repairs	....	..	..	..	..	..	..	283		
36	Wooden punt with iron ribs composite.	1877-78 ..	72 0	13 0	3 6	2 6	40 34	3,000	1,468	190	Do.
	Special repairs	....	..	..	..	..	..	..	236		
37	Wooden punt with iron ribs composite.	1877-78 ..	72 0	13 0	3 6	2 6	40 34	3,000	1,298	190	Do.
	Special repairs	....	..	..	..	..	..	..	195		
38	Wooden punt with iron ribs composite.	1877-78 ..	60 0	13 0	3 6	2 6	34 29	2,500	1,206	160	Do.
39	Do. do. ..	1881-82 ..	60 0	13 0	3 6	2 6	34 29	2,288	998	160	Do.
	Special repairs	....	..	..	..	..	..	..	38		
40	Wooden punt with iron ribs composite.	1881-82 ..	60 0	13 0	3 6	2 6	34 29	2,287	427	160	Do.
42	Do. do. ..	Do. ..	60 0	13 0	3 6	2 6	34 29	2,287	428	160	Do.
	Special repairs	....	..	..	..	..	..	..	678		
43	Wooden punt with iron ribs composite.	1882-83 ..	72 0	13 0	3 6	2 6	40 34	2,600	1,040	190	Do.
	Special repairs	....	..	..	..	..	..	..	1,200		
44	Wooden punt with iron ribs composite.	1882-83 ..	72 0	13 0	3 6	2 6	40 34	2,600	1,040	190	Do.
45	Do. do. ..	Do. ..	60 0	13 0	3 6	2 6	34 29	2,160	864	160	Do.
47	Do. do. ..	Do. ..	72 0	13 0	3 6	2 6	40 34	2,600	1,040	190	Do.
48	Do. do. ..	1883-84 ..	72 0	13 0	3 6	2 6	34 29	2,600	1,300	190	Do.
49	Do. do. ..	Do. ..	60 0	13 0	3 6	2 6	40 34	2,160	1,080	160	Do.
	Special repairs	....	..	..	..	..	..	..	685		
53	Wooden punt with iron ribs composite.	1883-84 ..	72 0	13 0	3 6	2 6	40 34	2,600	1,300	190	Do.
54	Do. do. ..	1884-85 ..	60 0	13 0	3 6	2 6	34 29	2,160	1,296	160	Do.
55	Do. do. ..	1883-84 ..	60 0	13 0	3 6	2 6	34 29	2,600	1,300	160	Do.
56	Do. do. ..	1884-85 ..	72 0	13 0	3 6	2 6	40 34	2,600	1,560	190	Do.
	Special repairs	....	..	..	..	..	..	..	767		
57	Wooden punt with iron ribs composite.	1884-85 ..	60 0	13 0	3 6	2 6	34 29	2,055	1,233	160	Do.
	Special repairs	....	..	..	..	..	..	..	630		

58	Wooden punt with iron ribs composite.	1884-85 ..	60	0	13	0	3	6	2	6	34	29	1,900	1,140	160	Do.
	Special repairs	....	..		..		..		..		..		..	184		
59	Wooden punt with iron ribs composite.	1885-86 ..	60	0	13	0	3	6	2	6	34	29	2,013	1,410	160	Do.
60	Do. do. ..	Do. ..	60	0	13	0	3	6	2	6	34	29	2,075	1,452	160	Do.
61	Do. do. ..	1886-87 ..	60	0	13	0	3	6	2	6	34	29	2,085	1,669	160	Do.
62	Do. do. ..	Do. ..	60	0	13	0	3	6	2	6	34	29	2,156	1,724	160	Do.
63	Do. do. ..	Do. ..	60	0	13	0	3	6	2	6	34	29	2,064	1,652	160	Do.
64	Do. do. ..	Do. ..	60	0	13	0	3	6	2	6	34	29	2,168	1,951	160	Do.
65	Do. do. ..	Do. ..	60	0	13	0	3	6	2	6	34	29	2,169	1,952	160	Do.
66	Do. do. ..	Do. ..	60	0	13	0	3	6	2	6	34	29	2,164	1,948	160	Do.
67	Do. do. ..	....	..		..		..		..		..		..	..	160	Under construction.
68	Do. do. ..	....	..		..		..		..		..		..	..	160	
69	Do. do. ..	....	..		..		..		..		..		..	..	190	
70	Do. do. ..	....	..		..		..		..		..		..	..	190	
											Total ..		68,891	42,801	5,610	
41	Small iron punt	Unknown ..	29	0	6	6	2	3	1	6	6	5	250	100	30	Wants special repairs.
46	Trap punt	1881-82 ..	60	0	10	2	2	9	2	0	30	25	3,652	1,110	175	In fair order.
1	Anicut paddle boat violet ..	1877-78 ..	36	0	6	0	2	6	..		..		900	160	90	In good order.
	Special repairs	....	..		..		..		..		..		..	22		
9	Staff boat	1877-78 ..	42	0	8	0	3	0	..		..		1,310	..	120	Fair order.
	Special repairs	....	..		..		..		..		..		..	309		
10	Staff boat	Purchased. 1881-82 ..	29	10	7	5	1	9	..		..		..	..	..	Sold (*vide* G.O., No. 722 I., dated 19th November 1887).
11	Do.	Do. ..	50	0	8	0	2	6	..		..		1,621	541	170	Wants special repairs, Estimate sent for sanction.
12	Do.	Do. ..	50	0	8	0	2	6	..		..		1,621	541	170	Do. do.
13	Do.	Do. ..	34	6	7	0	3	0	..		..		..	..	..	Sold (*vide* G.O., No. 722 I., dated 19th November 1887).
14	Do.	1884-85 ..	39	0	7	0	2	6	..		..		1,355	791	120	In good order.
15	Do.	1885-86 ..	52	0	8	0	2	9¼	..		..		1,963	1,309	200	Do.
16	Do.	1887-88 ..	39	0	8	0	2	0	..		..		1,556	1,297	120	In good order. The boat was entered as No. 2 by mistake in the statement printed in G.O., No. 722 I., dated 19th November 1887.
											Total ..		9,426	4,788	900	
											Grand Total ..		..	..	13,543	

Rule for finding present book-value.

(1) Punts to be reduced 10 per cent. every year and the amount of special repairs, if any, to be added thereto.
(2) Staff boats to be reduced by one-twelfth of their original cost for each year of their life.

20th January 1889.

(Signed) A. M. HAYES,
Executive Engineer, Eastern Kistna Division.

Detailed approximate estimate for the annual cost of maintenance of the irrigation floating plant, Kistna district.

Particulars.	Steamer Alexandra.	Dredges, Nos. 1 and 2.	Dredges, Nos. 3, 5 and 9.	Hand-dredges.	Iron punts, Nos. 50, 51 and 52.	Iron punts, Nos. 21, 22, 23, 24, 26 to 32.	Iron punts, Nos. 1, 6, 8, 9, 11, 12, 16 to 20.	Composite punts of Rs. 160 upkeep.	Composite punts of Rs. 190 upkeep.	Small iron punt.	Trap punt.	Anicut paddle boat.	Staff boats, Nos. 9, 14 and 16.	Staff boats, Nos. 11 and 12.	Staff boat, No. 15.
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Docking and launching.	..	..	..	..	..	..	..	..	..	..	..	..	5	10	15
Painting	105	112	140	..	91	39	70	..	..	..	70	22	36	54	63
Caulking	6	24	78	54	24	14	24	86	102	..	21	9	45	60	60
Ropes, &c.	..	21	22	..	..	..	..	..	..	2	..	7	..	..	..
Serang	90	30	30	..	..	..	..	..	..	..	..	..	..	..	..
Engine-driver ..	90	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stocker	48	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lascars	42	70	80	42	7	14	7	7	14	27	14	35	21	21	21
Centage and contingencies.	64	..	..	13	..	8	5	12	14	..	4	2	8	12	14
Miscellaneous ..	175	..	..	..	..	..	..	..	..	1	3	..	..	..	..
Sundry repairs ..	..	68	110	25	28	45	44	55	60	..	63	15	5	13	27
Total ..	1,020	325	460	134	150	120	150	160	190	30	175	90	120	170	200

20th January 1889.

(Signed) A. M. HAYES,
Executive Engineer, Eastern Kistna Division.

Abstract showing the comparison of details between the estimated maintenance cost of floating plant in Kistna district for 1888-89 and 1889-90.

—	Number.		Original value.		Book-value.		Cost of upkeep.		Remarks.
	1889-90.	1888-89.	1889-90.	1888-89.	1889-90.	1888-89.	1886-90.	1888-89.	
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	
Steamer	1	1	13,131	13,131	10,505	11,818	1,020	620	
Dredges	7	8	1,14,667	1,24,770	904	—10,226	2,298	2,396	Priestman's dredger omitted; hence the decrease.
Iron punts	25	25	59,234	59,234	13,480	13,796	3,420	3,420	
Wooden punts with iron ribs composite.	33	29	68,891	62,390	42,801	37,880	5,610	4,910	Four under construction; hence the increase.
Iron punt, small ..	1	1	250	250	100	125	30	30	
Trap punt	1	1	3,652	3,652	1,110	1,475	175	175	
Anicut paddle boat ..	1	1	900	900	182	250	90	90	
Staff boats	6	8	9,426	9,583	4,788	9,583	900	796	Two were sold (*vide* G.O., No. 722 I., dated 19th Nov. 1887); hence the decrease.
Total ..	75	74	2,70,151	2,73,910	73,870	64,701	13,543	12,437	

20th January 1889.

(Signed) A. M. HAYES,
Executive Engineer, Eastern Kistna Division.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

No. 15 I.

Submitted to Government.

2. The estimate of the cost of upkeep of the floating plant, excluding village ferry boats and the estimate of charges on account of the steamer when used by Public Works officers on duty during 1889-90, amounts to Rs. 13,143 and exceeds that of the current year by Rs. 706, the increase being due to provision having been made for the maintenance of four wooden punts now under construction and for the staff boats at a higher rate than was allowed in this year's estimate.

3. The annual reductions for depreciation having wiped out all the book-value of some of the dredges and iron punts and having unduly depreciated that of other items, it is recommended that sanction may be accorded to the re-valuation of all the floating plant belonging to the delta.

Chepâk,
18th February 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 25th February 1889, No. 97 I., Public Works.

The estimate of Rs. 13,143 for the maintenance of the floating plant of the Kistna delta is approved and will be included in the final issue of the budget estimates of major works for the ensuing official year. The estimate of charges on account of the steamer *Alexandra* when used by Public Works officers on duty will be provided for separately.

2. The Superintending Engineer should take early steps for the re-valuation of the floating plant belonging to the delta.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 25th.

Recd. *Encl.*

G.O., 25th Feb. 1889, No. 97 I.

FEBRUARY.

Floating Plant of the Kistna Delta

Estimate for maintenance of the —, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

Notes of Inspection by the Acting Chief Engineer for Irrigation, 30th January to 5th February 1889.

SRIVAIKUNTHAM ANICUT SYSTEM.

FLOOD BANKS ABOVE ANICUT.—The one on the right side of the river appears to be in good order ; that on the left side is at a short distance above the anicut forced down to the extreme margin of the river by the large temple ; there is at the place an old river wall which protects and holds up the front slope of the bank, and this wall should be maintained as far as possible ; it is not practicable now to eradicate the numerous trees which are growing in it without demolishing the wall, but it is possible that, with those that are not of the fig tribe, their enlargement and consequent increased injury to the wall may be arrested by cutting into them as far as possible and searing them ; this should be done by the anicut establishment ; if the wall falls it will have to be replaced by an expensive revetment. A short distance downstream of the temple wall and just below a mundapum, the top part of the old wall at site of an old breach was overthrown landwards by the pressure of the water during the last high floods and as there is a deep scour hole both in front and rear of the embankment its safety was endangered, considerable leakage appearing near its base. The fallen portion of the wall as far as the steps, to which an embanked path leads from the flood bank, should be rebuilt in brickwork as thick as the thickness of the old wall will allow and it should be backed up as much as possible on the land side by having the *debris* of the fallen works piled up against it where weakest. On no account must more earth be taken from the deep hollow between the wall at the place and the embankment, and if during the dry season sand can be obtained at a moderate cost from the river near at hand the hollow should to a depth of 2 yards be filled in with it.

2. ANICUT.—The work is in excellent order and the disturbance of its rough stone apron by the recent high floods is surprisingly slight ; the few disturbed patches must of course be repacked.

The piers for the girder bridge over the anicut (under execution by the Local Funds) have been completed ; they are 4 feet thick and as there are 32 of them they considerably affect the waterway and will certainly increase the afflux ; the reduction to 4 feet thickness from the 6 feet thickness of their bases should have been made just below the crest of the anicut not just above it which makes an awkward shoulder likely to cause eddies.

3. NORTH AND SOUTH CHANNEL HEAD SLUICES.—Both of these require platforms for working the gearing from which can easily be supplied by planking in front and rear of the gearing beams ; the joints between the planks should be *open* ones about 1″ wide. The spanners or levers for working the gearing should have 3 hand-pieces instead of only 2, and at the south sluice, where the two large vent shutters can now hardly be worked when there is much pressure against them, the levers should be made longer and more space given for them by cutting off the projecting string

course. (A complete set of the lithographed plans of these works should be kept by the Superintendent of the Works as well as by the Sub-division officer and overseer who did not seem aware of their existence!)

4. ARUMUGAMANGALAM TANK.—The bank of this, which is for some distance used as a road, is in many parts considerably below the height to which it should be maintained, viz., $4\frac{1}{2}$ feet above F.T.L.; this requires attention and the proper gravelling of the portion used as a road should be insisted on.

The weir (calingulah) of the tank appears to be in good order; there was when it was seen a turf bank on it holding water up to above its crest; this, it is supposed, had been permitted by the officers of this department as there is no probability of any rain till after the water is much lowered, but great care must be taken that no raising of the F.T.L. is allowed during the part of the year when land drainage is likely to come into it.

5. PAYKULAM AND POTTAIKULAM TANKS.—These are long shallow tanks, the banks of which, together with that of the Korampallam tank next to the north, stretch for nearly 11 miles right across the drainage of the country, the former of the two surpluses into the latter and that again into the Korampallam tank. The banks are in many places dangerously low and worn down by traffic along them; they should be kept safe.

6. KORAMPALLAM TANK.—This is the terminal tank of the northern section of the system; into it flows the "upper odai," draining about 170 square miles which till 1886 had no means of escape except the "weir" or "dam" at the extreme south end of the tank. This was not sufficient and breaches frequently occurred, those in 1884 being very extensive. In 1886 a "flush escape" or "byewash," 500 feet long, was made near the northern end of the tank as recommended by Colonel Mullins when Chief Engineer for Irrigation in para. 89 of his inspection notes with Proceedings of Madras Government, No. 197 I., dated 16th March 1881, the level of the ground at which it was made being, however, about $1\frac{1}{2}$ feet *below* instead of 2 feet *above* F.T.L. as recommended.

The provision of this escape undoubtedly saved the tank from breaching in October of this past season when the "odai" came down in heavy flood. The water which found its exit from the tank at this "flush escape" flowed across the Tuticorin fresh-water channel and so seriously damaged it that some Rs. 1,500 have had to be spent on its repairs including compensation for land. That damage would occur to the channel whenever the escape discharged was foreseen (see para. 90 of Colonel Mullins' notes above referred to and end of para. 5 of Superintending Engineer's note, printed with Proceedings of Madras Government, No. 307 I., dated 6th April 1886) the cost of repairs, however, was less than would have been that of closing breaches and it was better for Tuticorin to have its fresh-water channel rendered useless for a short time than to have the reservoir which supplies it emptied as it would have been had its bank breached. The Executive Engineer of the division has proposed to provide for carrying off harmlessly all water which may pass over this escape by means of a channel from it to the existing drainage channel north of the Palamcottah Tuticorin road, known as "Puckle's drain;" but this would not only be very expensive owing to the compensation to be paid for land and to the necessity for a bridge to carry the road over it, but it would throw considerable extra duty on the Tuticorin-Etaiyápuram road bridge and on the railway bridge over the drain, which would doubtless be objected to by both the Local Fund and Railway authorities. It will be better, I think, to make such arrangements that only very seldom will this escape be called into play, and this, I consider, can be done by giving the water which comes down the "odai" free access to the surplus * sluice at the south end of the tank. This work has, within the last three years, been entirely remodelled and is now one of the most powerful works of the kind in the Presidency. It has 48 six-feet wide falling shutters, of which seven are 6 feet high and forty-one 8 feet high. These shutters have their tops at F.T.L. and can be dropped on the drawing of a pin and releasing of a catch with which each shutter is attached to holding up chains anchored to prolongation of the piers in front.

* Formerly "upper odai dam."

The arrangements are similar to those in use on some of the escapes for passing torrents on the Ganges canal between its head and Rurki; they have cost about Rs. 31,395 and have been well carried out; they were all brought into operation during the floods of the past season and though relifting the shutters is a slow process and requires the engagement of extra labor to assist the regular establishment, they may be said to work satisfactorily. They have not, however, such an effect on the whole tank as they should have, because, between where the "odai" enters the water-spread of the tank and the work, there has accumulated a great shoal covered with vegetation, and the stream instead of running on on its old course to the surplus sluices is diverted northwards and its flood-waters are poured into the northern portion of the tank and thence have to flow back over shoals and through narrow channels to get to the sluices. The consequence is that in the last floods the water at the northern end of the tank at the "flush escape" stood, it is said, for some time 2 feet higher than it did near these sluices when open. All vegetation should be cleared off the obstructing shoal and through it should be excavated a 50-feet wide channel with its bed near the road bridge at the level of the floor of that work and sloping down to 2 feet or 3 feet above the sill of the sluices at 100 feet away from them; by judicious working of the sluices when early freshets come down the "odai," such a channel can, it is believed, be made to widen itself out, and care should be taken not to again allow it to close up. A wide channel should also be opened through the shoal between the northern and southern portions of the tank. Mr. Ellis, the Sub-division officer, who has had much to do with the construction of the surplus sluices and takes great interest in their success, will doubtless give these suggestions the benefit of his personal careful attention on instructions from the Executive Engineer.

The bank of the tank leaks considerably in many places; one of the worst of these should be dealt with this year when the water is low by removing the revetment and facing the bank with the best available soil puddled 2 feet thick with a trench of the same along the toe let 3 feet into the ground and then replacing the revetment; if this answers it can be carried out at other places where it seems absolutely necessary. Where leakage continues and there are slips at the rear toe of the bank that should be kept drained by means of trenches filled in with rough stone carried into the rear slope as far as may be necessary; stoppage of leakage at the rear toe should, of course, never be attempted; it only causes the water to rise higher and more thoroughly saturate the bank.

7. TAMBRAPARNI RIVER AND FLOOD EMBANKMENTS BELOW THE SRIVAIKUNTHAM ANICUT.—About two miles below the anicut there is the important village of Alvár-Tirunagiri, which stands on high ground jutting out into the river which is at the place still further contracted by the Kanteswaram temple and wall on the north side of the river. The river face of Alvár-Tirunagiri has along it a stone wall constructed by the people interested, probably centuries ago; this wall has in parts got into considerable disrepair, and the Sub-Collector and Chairman of the Local Union requested me to see it under the impression that it ought to be kept in order at Government expense by this department, but, after inspecting the place, I can see no reason why Government should have anything to do with the work which is purely for the protection of private property. The argument was adduced that Government should keep the wall in order because it obviated the necessity for a flood embankment at the place; but this is not so, the wall merely prevents erosion of the river margin at the place; it does not prevent spill, which is prevented by the high level of the ground at the place, and were any flood embankment to be put there, it would have to be taken considerably in land, because, as said above, the river is too contracted at the place; the most that the people interested can expect is that on account of the importance of the private interests at stake they be allowed to maintain the wall which really encroaches on the river. The general retirement of the flood embankments which eight years ago was decided to be absolutely necessary has not been carried out in portions because of obstruction on the part of villagers and on this subject a special report will be made.

8. The last south-west monsoon rains having been very scanty, the first crop over almost the whole area of the Srívaikuntham anicut system was a failure; the north-east monsoon rains, however, having been copious the second crop has been well started

and all the tanks being quite full and an appreciable amount of water still passing down the main channels, there is every hope that this second crop will be a good one.

9. MARUDUR ANICUT.—This is the anicut next above the Srívaikuntham one; it is an old native work extensively repaired and improved by the English Government. It is on the whole in good order, but here and there displaced stones have to be replaced. There are some deep pools just below the body wall, and, when the water is at its lowest, examination should be there made to see if there is any cutting back of the rock under the foundation or of the body wall, and if there is, filling in or under-pinning with Portland cement concrete must be carried out. The head sluices to the main channels "east" and "west," built in 1876, are in fair order, except the holding down arrangements of the screw gearing which require considerable repairs; these were pointed out to the Executive Engineer.

CHEPÂK,
21st February 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

No. 17 I.

Submitted for the information of Government.

CHEPÂK,
21st February 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 27th February 1889, No. 100 I., Public Works.

Communicated to the Superintending Engineer, VI Circle, for information and guidance.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 27th.

Recd. *Encl.*

G.O., 27th Feb. 1889, No. 100 I.

FEBRUARY.

Srivaikuntham Anicut System

Notes of inspection by the Acting Chief Engineer for Irrigation of the —, communicated to the Superintending Engineer, VI Circle.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers :—

From the Superintending Engineer, V Circle, dated 9th February 1889, No. 5319.

Memorandum to the Superintending Engineer, V Circle, dated 14th February 1889, No. 8-N.A.

Memorandum to the Executive Engineer, Buckingham Canal Division, dated 14th February 1889, No. 15 B.C.

From Colonel W. H. BURTON, R.E., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 12th February 1889, No. 5397.

In continuation of my letter No. 5319, dated 9th February 1889, I have the honor to state that the Executive Engineer, North Arcot Division, has the following grants which are not required for expenditure in the current official year :—

Provincial Irrigation and Navigation Works for which Capital and Revenue Accounts are kept.
Capital Account.
Pálár Anicut System.

	RS.
Tools and plant	640
Revenue Account.	
Tools and plant	735

From the same officer, dated 18th February 1889, No. 5561.

With reference to your memorandum No. 8-N.A. of 14th February 1889, I have the honor to state that it was anticipated that the revised estimates of works under Tennampattu and Sakkiramallur channels of Pálár anicut system would have been submitted sooner than they were, and that earlier sanction than is now possible would follow as the revision of estimates has only lately been decided after inspection of the works by the Chief Engineer for Irrigation in February; hence the cause of delay in surrendering the grant under Capital Account.

2. The amounts of Rs. 1,500 surrendered under Revenue Account and Rs. 3,500 under Ordinary Irrigation Minor New Works are not required for expenditure in the Chingleput and South Arcot Divisions.

Telegram from the Executive Engineer, Buckingham Canal Division, to the Deputy Chief Engineer for Irrigation, dated 20th February 1889.

Your No. 15 B.C. of 14th. Can opened; additional grant mentioned if allotted.

No. 16 I.

Submitted to Government with the recommendation that the sum surrendered from the grant for works of the Pálár anicut system under Capital Account, together with the proportionate charge for establishment, may be transferred to the Buckingham Canal Division.

2. Other Superintending Engineers may be requested to report by wire if they can arrange for utilizing any portion of the grants surrendered by the Superintending Engineer, V Circle, under other heads, the amount available being Rs. 7,577 as shown below:—

Pálár Anicut System.
Capital Account.

	RS.	RS.
Tools and plant	640	640
Revenue Account.		
Maintenance and repairs	1,500	
Establishment	345	
Tools and plant	735	2,580
Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept.		
Minor Original Works—		
North Arcot Division	3,500	
Establishment	805	
Tools and plant	52	4,357
Total ...		7,577

CHEPÂK,
21st February 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

ORDER—dated 27th February 1889, No. 103 I., Public Works.

The following transfer of funds is sanctioned:—

Provincial.
43. Minor Works and Navigation.
Irrigation and Navigation Works for which Capital and Revenue Accounts are kept.
Capital Account.

From Pálár Anicut System.	RS.	*To* Buckingham Canal.	RS.
Works	12,248	Works	12,248
Establishment	2,817	Establishment	2,817
Total ...	15,065	Total ...	15,065

The Executive Engineer, Buckingham Canal Division, will submit, in due course, a statement showing the distribution by component works of the additional allotment now sanctioned.

2. The sum of Rs. 7,577 available by surrenders, as shown in para. 2 of the Acting Chief Engineer's endorsement, will be held in reserve, and the following deferred telegram will be sent to the Superintending Engineers, I, II and VI Circles:—

"Rs. 7,577 available under 43. Minor Works and Navigation, including establishment charges. Please wire if additional allotments are required."

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " " II "
" " " V "
" " " VI "
" Executive Engineer, Buckingham Canal Division.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 27th.

Recd. *Encl.*

G.O., 27th Feb. 1889, No. 103 I.

FEBRUARY.

Funds

Orders on note by the Acting Chief Engineer for Irrigation, recommending certain transfers of —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers:—

From Colonel H. SMALLEY, R.E., Superintending Engineer, III Circle, to the Chief Engineer for Irrigation, dated Bellary, 19th November 1888, No. 1814.

With reference to para. 1658, Standing Order No. 191 of 1887, I have the honor to forward for sanction and an appropriation of Rs. 300 an estimate of Rs. 3,150 for general repairs of boats in the Kurnool canal during the year 1888-89.

2. The repairs have been already completed.

3. A sum of Rs. 650 is due to contractors for work done last year. This was included in last year's estimate of Rs. 5,100, but only expenditure actually incurred, viz., Rs. 3,941, was sanctioned (*vide* G.O., No. 408 I., dated 14th July 1888).

4. Deducting the amount of the present estimate out of the grant of Rs. 3,645 under tools and plant for the current year, there remains only a balance of Rs. 495, which is not adequate to meet the various requirements under that head till the close of the current official year. Hence an additional allotment of Rs. 300 is required.

5. An approximate statement of upkeep of floating plant for 1888-89 has been submitted with this office No. 2012, dated 6th January 1888.

To the Superintending Engineer, III Circle, dated 27th Nov. 1888, No. 31 K.C.

From G. P. CARLESS, Esq., Executive Engineer, Kurnool division, to the Superintending Engineer, III Circle, dated 13th December 1888, No. 1402.

With reference to your endorsement No. 1943, dated 4th instant, I have the honor to explain that the repairs to the boats were completed this year *before* the receipt of G.O., No. 408 I., dated 14th July 1888. No accurate estimate for the repairs of those boats (whose hulls were in a rotten state) could be submitted till the required work was completed, which is generally done during the closure of the canal.

2. In regard to para. 2 of the Chief Engineer's letter, I have the honor to state that the sum of Rs. 650 due to contractors is not for work done to various boats but to only two (*P.B. Elephant* and providing planks to *C.B. Queen of Scots*), for which detailed estimates have already been submitted with my letter No. 1122 of 15th October 1888.

3. There are 4 teak punts (not *sungadies*) on the canal for crossing purposes, which are included in the annual boat repair estimates and have been mentioned in floating plant estimate for 1889-90, but which were omitted in the list for 1887-88.

4. Rs. 100 entered for traction charges is for taking and bringing back the boats for the use of the subordinates in the central and lower sub-divisions on the opening and closing of the canal.

5. Rs. 500, the excess amount required, can be transferred from the sale-proceeds of tools and plant.

No. 2555.

Submitted to the Chief Engineer for Irrigation with reference to his memorandum No. III-31 K.C., dated 27th November 1888.

(Signed) H. SMALLEY, Col., R.E.,
Superintending Engineer, III Circle.

16th February 1889.

No. 18 I.

Submitted to Government.

CHEPÂK,
23rd February 1889.

(Signed) G. T. WALCH,
Ag. Chief Engineer for Irrigation.

To the Acting Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 28th February 1889, No. 104 I., Public Works.

The repairs to the boats having already been completed, there is now no necessity for sanctioning the estimate of Rs. 3,150 forwarded by the Superintending Engineer. The Examiner of Public Works Accounts is, therefore, authorized to admit the expenditure incurred in repairing the boats.

2. The attention of the Superintending Engineer is drawn to para. 2 of G.O., No. 408 I., dated 14th July 1888.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, III Circle, with 3 enclosures.
" Examiner, Public Works Accounts, with one abstract estimate.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS:

Dated February, 28th.

Recd *Encs*

G.O., 28th Feb. 1889, No. 104 I.

FEBRUARY.

Kurnool Canal Boats

The Examiner, Public Works Accounts, authorized to admit the expenditure incurred in repairing the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From Colonel W. H. BURTON, R.E., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 22nd February 1889, No. 5729.

In continuation of my letter No. 5561, dated 18th February 1889, I have the honor to state that the Executive Engineer, Chingleput Division, has now applied for a further grant of Rs. 2,000 under Revenue, Maintenance and Repairs of Chembrambakam tank system, for expenditure during the current year. I request that the additional grant may be sanctioned, if convenient, from the funds surrendered in the North Arcot Division, referred to in your memorandum No. 8-V.—N.A. of 14th February 1889.

ORDER—dated 28th February 1889, No. 106 I., Public Works.

The sum of Rs. 2,000 required for the Chembrambakam tank system under Maintenance and Repairs, or Rs. 2,460 including establishment charges, will be appropriated from the amount held in reserve in G.O., No. 103 I., dated 27th February 1889.

(True Extract.)

(Signed) G. T. WALCH,
Ag. Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, V Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated February, 28th.

Recd. *Encl.*

G.O., 28th Feb. 1889, No. 106 I.

FEBRUARY

Chembrambakam Tank System

Rs. 2,000 allotted for the — under Maintenance and Repairs.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

TABULAR STATEMENT OF MISCELLANEOUS PROCEEDINGS AND MATTERS OF ROUTINE,

IRRIGATION,

FOR THE MONTH OF FEBRUARY 1889.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Erratum in G.O., No. 2 I., of 8th January 1889. Passing orders on the preliminary issue of the Irrigation budget estimates for 1889-90.	1st Feb. 1889, No. 32 I.	......
Copy forwarded to the Government of India ...	1st do. do. No. 32-A. I.	......
Minor Irrigation Works.—Proceedings in the Revenue Department reviewing expenditure on — up to end of September 1888, communicated to the Chief Engineer for Irrigation.	5th do. do. No. 42 I.	11th Dec. 1888, No. 737 I.
Errata in traffic statement printed with G.O., No. 771 I., of 24th December 1888.	6th do. do. No. 46 I.	......
Copy forwarded to the Government of India ...	6th do. do. No. 46-A. I.	......
Statement of objectionable items in the accounts of the VI Circle.—Orders on — for October 1888.	6th do. do. No. 47 I.	14th Jan. 1889, No. 11 I.
Statement of objectionable items in the accounts of the II Circle.—Orders on — for September 1888.	6th do. do. No. 48 I.	1st July 1887, No. 393 I. 21st Nov. 1888, No. 698 I. 25th Jan. 1889, No. 25 I. 19th Nov. 1888, No. 686 I. 7th Sept. 1888, No. 524 I.
Statement of objectionable items in the accounts of the II Circle.—Orders on —.	6th do. do. No. 49 I.	1st Dec. 1888, No. 719 I. 7th Sept. 1888, No. 524 I. 21st Nov. 1888, No. 698 I. 19th Nov. 1888, No. 686 I. 1st Oct. 1888, No. 577 I. 1st Nov. 1888, No. 653 I.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Minor Irrigation Works.—Proceedings of the Board of Revenue reviewing the progress reports of — up to end of November 1888, recorded.	6th Feb. 1889, No. 50 I.	5th Feb. 1889, No. 42 I.
Statement of objectionable items in the accounts of the Periyár.—Orders on — for October 1888.	8th do. do. No. 52 I.	25th Jan. 1889, No. 29 I.
Statement of objectionable items in the accounts of the III Circle.—Orders on — for October 1888.	8th do. do. No. 53 I.	14th Jan. 1889, No. 10 I.
Statement of objectionable items in the accounts of the V Circle.—Orders on — for October 1888.	11th do. do. No. 59 I.	25th Jan. 1889, No. 30 I.
Ganjam-Gopálpur Canal. — Proceedings in the Financial Department directing the Accountant-General to place Rs. 40,000 at the disposal of the Public Works Department for the —, communicated to the officers concerned.	11th do. do. No. 64 I.	6th Feb. 1889, No. 580 C. 16th Sept. 1885, No. 798 I. 16th May 1885, No. 451 I.
Tank Restoration Works.—Telegram to the Government of India intimating despatch of programme of —.	11th do. do. No. 66 I.	......
Tank Restoration Works.—Proceedings in the Revenue Department approving programme of — proposed to be done next year, communicated to the Chief Engineer for Irrigation.	12th do. do. No. 67 I.	21st Dec. 1888, No. 763 I.
Canal Traffic.—Proceedings in the Revenue Department forwarding to the Government of India statements of — for the last five years, recorded.	13th do. do. No. 69 I.	......
Sidhnai Canal.—The Government of India asked for copy of the volume of papers and drawings relating to the — by Mr. Maclean, C.E., Executive Engineer.	14th do. do. No. 70 I.	......
Erratum in G.O., No. 597 I., dated 10th October 1888. Sanctioning estimate for rest-house for No. II, Periyár Division.	14th do. do. No. 71 I.	......
Ganjam-Gopálpur Canal.—Orders on Proceedings in the Financial Department allotting Rs. 5,000 for the —.	15th do. do. No. 74-A. I.	8th Feb. 1889, No. 611 C. 11th Feb. 1889, No. 64 I. 6th Feb. 1889, No. 580 C. 16th Sept. 1885, No. 798 I. 16th May 1885, No. 451 I.
Survey establishment for measurement of irrigated lands in Kistna.—Proceedings in the Revenue Department approving rearrangement of the —, communicated to the Chief Engineer for Irrigation.	15th do. do. No. 75 I.	3rd Oct. 1888, No. 587 I.
Statement of objectionable items in the accounts of the I Circle.—Orders on — for September 1888.	16th do. do. No. 78 I.	20th Dec. 1888, No. 751 I. 23rd Nov. 1888, No. 701 I. 20th Dec. 1888, No. 756 I. 9th Jan 1889, No. 6 I.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Statement of objectionable items in the accounts of the Periyár.—Orders on — for November 1888.	18th Feb. 1889, No. 81 I.	8th Feb. 1889, No. 52 I.
Rushikulya Project.—Telegram from the Government of India sanctioning additional grant of Rs. 12,000 for the —, communicated to officers concerned.	21st do. do. No. 83 I.	16th Feb. 1889, No. 80 I.
Minor Irrigation Works.—Proceedings of the Board of Revenue distributing the grant for — for 1889-90, recorded.	22nd do. do. No. 91 I.	1st Dec. 1888, No. 715 W. 8th Jan. 1889, No. 2 I. 12th Apl. 1888, No. 236 I. 18th Jan. 1888, No. 213 W.
Bridge over the Buckingham Canal at Mahabalipuram.—Certain inhabitants of Mahabalipuram informed with reference to their petition that a — is considered unnecessary.	22nd do. do. No. 92 I.	......
Kalingaroyen channel—Ordered that the Government of India be addressed on the subject of the —.	25th do. do. No. 94 I.	17th Dec. 1888, Nos. 743-44 I.
The Government of India addressed ...	25th do. do. No. 95 I.	......
Statement of objectionable items in the accounts of the VI Circle.—Orders on — for November 1888.	26th do. do. No. 98 I.	6th Feb. 1889, No. 47 I. 14th Jan. 1889, No. 11 I.
Statement of objectionable items in the accounts of the IV Circle.—Orders on — for November 1888.	26th do. do. No. 99 I.	14th Jan. 1889, No. 9 I. 30th Nov. 1888, No. 714 I.
Statement of objectionable items in the accounts of the II Circle.—Orders on — for October 1888.	27th do. do. No. 101 I.	6th Feb. 1889, No. 48 I.
Collector's boat.—Proceedings in the Revenue Department regarding rent for use of the — in the Kistna district, recorded.	27th do. do. No. 102 I.	......
Appropriation return for January 1889, forwarded to the Accountant-General.	28th do. do. No. 105 I.	24th Jan. 1889, No. 24 I. 22nd Dec. 1888, No. 765 I.